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Foreword

In the spring of 1958 the whole Chinese people joined in a sweeping movement to build industry. Small and medium-sized factories and mines sprang up in every province, city, autonomous region, special region, county and township; they even appeared in agricultural co-ops. And they are run in line with the principle of achieving greater, faster, better and more economical results.

Nanchung Special Administrative Region, in the province of Szechuan, built 43,000 factories in two months. Acheng County, in Heilungkiang, erected the "Vanguard" furnace, producing its first smelt of iron 35 days after the first brick was laid. During the big leap forward in agriculture, the Hsukuang No. 1 Co-op in Ngocheng County, Hupeh, built a granular fertilizer factory, a farm implements factory, a plant for the processing of farm products, and a methane power station; in a little more than one month, the co-op turned out over twenty tons of granular fertilizer, and manufactured and repaired 421 farm implements and other tools.

Most of the new factories, mines and power stations are simple, requiring no investment on the part of the government. They take little time to build and can go into operation quickly. A number of them are turning out new, important articles on a trial basis. This greatly accelerates the rate of China's socialist industrialization, and expedites the development and modernization of agriculture.

China is a large, but economically backward nation. How can this state of affairs be changed quickly and China be transformed into a powerful socialist country with modern industry, modern agriculture and modern science? The Central Committee of the Chinese Communist Party and Comrade Mao Tse-tung have pointed out the way: To speed up construction, and adhere to the policy of building more, faster, better and more economically. In other words, effort must be made to realize the general line for building socialism, exerting the utmost and pressing ahead consistently.

How, in practice, will this be achieved? According to the analysis of the Party's Central Committee and Comrade Mao Tse-tung, China is a large agricultural country, with five of its six hundred million people engaged in farming. The peasants are a mighty force both in China's revolutionary struggles and in its national construction. The Chinese working class will be able to win only if it relies on this great ally, and arouses its positive, constructive spirit. That is why, while giving priority to heavy industry, China must simultaneously develop industry and agriculture, national and local industries, small and medium-sized enterprises as well as the large ones.

All this will stimulate the biggest labouring force in the world to expand the production of grain, cotton and industrial raw materials, to contribute its inexhaustible strength to create limitless wealth and accumulate vast funds for China's industrialization. At the same time it will create a tremendous demand for industrial goods in the largest domestic market in the world which, in turn, further hastens industrial growth. It will also encourage every level of local enterprise — right down to the agricultural co-ops — to start its own industry. "The fire burns high when everybody adds wood to it," as a Chinese saying goes. Through the concerted efforts of the whole nation, China will be able to build more, faster, better and more economically.

China's agricultural big leap forward began in the winter of 1957. The whole country built water conservancy projects, accumulated fertilizer, planted trees and improved farm tools. It was a big success. The flourishing of agriculture vastly increased the demand for chemical fertilizer, tools, power-generating equipment, equipment for processing farm products. . . . This was a great stimulus to industry. At the same time, the startling accomplishments scored by the people demonstrated what a powerful force they are in the battle against nature. This opened new vistas to the thinking of the administrative personnel and all the people, heightening their political consciousness and encouraging them to think, speak and act boldly.

It was under these circumstances that the Central Committee of the Chinese Communist Party called in good time for demolishing the mysterious concept that industry can be run only by a few people. It put forward the policy of running industry by relying on the whole Party and the whole people. Given positive leadership and with the people's initiative brought into full play, an all-out drive for industrial expansion began to sweep the country.

The rapid development of industry in the countryside necessarily required the transfer of part of the labouring force from agriculture to industry. It meant going beyond the confines of the agricultural co-ops and reallocating personnel on a larger scale. The co-ops, with only a few dozen or a few hundred families in each and engaged in agriculture alone, couldn't cope with the new situation. The peasants demanded the formation of people's communes that could engage in farming, forestry, animal husbandry, side-occupations and fishery, and merge industry, agriculture, trade, culture and education, and military affairs into one. Thus, the whole people running industry was a powerful impetus to the formation of people's communes throughout the land.

Now that people's communes have been formed, each with a few or ten thousand households, it is easier to utilize manpower according to unified plans. Funds and technical skill that formerly were spread thin among the many co-ops, now are concentrated. Having at their command much greater manpower, the people's communes can do things more efficiently than the co-ops, give a wider scope to the productive forces, and are thus creating still better conditions for the growth of rural industry.

Many foreign friends and readers are aware of the rising tide of the whole people building industry in China. They have repeatedly asked us to give them more details. How do the local industries obtain funds, technically skilled personnel and equipment? How do they solve their various knotty problems? How do they learn management?

In an attempt to show our foreign readers something of the true picture and satisfy their requests, we have compiled 13 articles, plus an editorial from *Renmin Ribao* (People's Daily) on the development of local industries in line with the principle of building more, faster, better and more economically, and are presenting them in this booklet. Although they cannot tell the whole story and the material included may be out-of-date when this booklet reaches the readers, the incidents they relate are typical and offer a view of the over-all aspect.

DEVELOP LOCAL INDUSTRY ON THE PRINCIPLE OF ACHIEVING MORE, FASTER, BETTER AND MORE ECONOMICAL RESULTS

Renmin Ribao Editorial, May 12, 1958

Local industries are being founded throughout China at a striking pace. All the provinces, many special administrative regions, counties and even townships have made daring plans for a leap forward to make the total output value of their local industries outstrip that of agriculture within five years or so. In most places decisions are carried out immediately, because of the enthusiastic support of the masses. Small industrial plants, mines and power stations have come up like mushrooms. Once such enthusiasm for building local industries is brought into play it acts like the fission of an atomic nucleus, releasing tremendous energy that creates a rate of progress in our industry hitherto unprecedented.

For a long time industry in China remained backward. In the reign of Tung Chih of the Ching dynasty (1644-1911), the Manchu government established the first cannon works in 1862 and the Kiangnan Industrial Plant in 1865. But until the eve of liberation, China had little heavy industry and as for light industry, only the textile industry was somewhat developed. Modern industry as a whole was fragmentary and its foundation was extremely weak. This is one of the major reasons why China remained impoverished and backward and could be bullied by the imperialists in the long past. Imperialism, bureaucrat-capitalism and feudalism again impeded the development of industry in China in many ways. In the period since liberation, as a result of three years of economic rehabilitation, another five years of construction and the socialist transformation, China's industry has made considerable progress. Many new industrial branches have been established and the preliminary foundation for industrialization has been laid. However, the existing industrial level does not correspond to China's size or population of 600 million, and the output of basic industrial goods lags behind many countries of the world. Viewed either from the angle of the domestic and international conditions, or from the angle of the economic and political conditions, it is clear that it is in the greatest interest of our people to develop China's industry as quickly as possible, so that the socialist industrialization of our country may be achieved by the earliest possible date. China has rich resources and vast manpower. During the First Five-Year Plan a number of modern industries were built up and rich experiences in industrial construction were accumulated. At the same time the Soviet Union and other fraternal countries have been helping us in our industrial construction. We are under the wise leadership of the Communist Party and the Chinese people are courageous and painstaking workers. All these factors create the necessary pre-conditions for China to industrialize at top speed. The only question is how.

This is the main point of the general line for socialist construction in our country. As far back as April 1956, Comrade Mao Tse-tung most brilliantly stated the correct principles in his report on "Ten Sets of Relationships" made at an enlarged meeting of the Political Bureau of the Central Committee of the Party. In this report Comrade Mao Tse-tung analysed the relationships between heavy and light industry and between heavy industry and agriculture, pointing out that in order to develop heavy industry as quickly as possible, it is necessary to make great efforts to develop agriculture; that is the principle of simultaneously developing industry and agriculture. In other words, while industry is developed rapidly it is necessary to develop agriculture rapidly also. This will guarantee the raw materials, markets, labour power and funds necessary for industrialization. On the question of how industry can make the most rapid progress, Comrade Mao Tse-tung, in this report, stated the principle of developing industries under the central authorities (mainly giant enterprises), and at the same time developing industries under the local authorities (mainly medium and small enterprises).

Comrade Mao Tse-tung set forth this principle as a result of the experiences in industrial construction both at home and abroad, especially China's experiences in industrial construction during the First Five-Year Plan (1953-57). During that period, we paid special attention to the development of industry administered by the central authorities. This was absolutely necessary and as a result of the rapid development of industry under central management, China has already built the preliminary foundation for industrialization. During the same period, because the socialist transformation was not yet complete and because not enough attention had been paid to it, the development of local industry was comparatively slow. During the First Five-Year Plan great efforts were made to establish giant enterprises, but not enough attention was paid to medium and small enterprises. Previously, it was thought that only giant enterprises were economical, while medium and small enterprises were not worthwhile. But actually this is not in conformity with the principle of achieving more, faster, better and more economical results. Of course, it is necessary to build giant enterprises which are the base of the industrialization of the country, and in the future various large and modern enterprises will still be needed and will be built. But giant enterprises alone are not enough. It is also necessary to establish large numbers of medium and small enterprises for they do not cost much, can be set up locally, take a short time to build and can go into production quickly. Our industry will make very rapid progress when, in the near future, in addition to the development of industry under central authorities, the initiative of the local authorities throughout the country is brought into full play actively to build up, alongside the many giant enterprises, large numbers of medium and small enterprises.

The policy on industrial construction, as put forward by Chairman Mao Tse-tung, is the policy of mobilizing all possible factors to build industry. It is the policy of liberating the productive forces. The simultaneous development of industries under central authorities and local industries will result in freeing local industry from its bounds. The simultaneous development of large, medium and small enterprises will remove the fetters that hamper the growth of medium and small enterprises. The development of all three types should be interrelated and act as a stimulus to each other's progress.

This is the specific road to the industrialization of China at a high speed.

In the whole country, there are more than 20 provinces and autonomous regions, over 180 special administrative regions and autonomous *chou*, 2,000-odd counties and over 80,000 townships. If industries are founded in every province and autonomous region, every special administrative region, every county and every township, the sum total for the whole country will be quite an amazing figure. The size of one single province in our country is greater than many European countries. Belgium, for example, has a population of only 8.9 million and an area of approximately 30,000 square kilometres, yet its annual steel output is around six million tons and China will surpass Belgium only in 1958. If industries are actively founded in all our provinces and autonomous regions, if we all work hard for ten or twenty years, there is no reason why China's steel output cannot jump to a figure ten or twenty times greater than that of Belgium.

Facts have shown that it is necessary to develop central industries and local industries simultaneously; to develop large, medium and small enterprises simultaneously if more, faster, better and more economical results are to be achieved. That is to say, that in addition to the founding of large enterprises by the central authorities, it is also necessary to arouse the initiative of the local authorities to found medium and small enterprises. This principle set forth by Comrade Mao Tse-tung was reaffirmed by the Eighth National Congress of the Party held in September 1956. The Third Plenary Session of the Central Committee of the Party held in October 1957 again decided to change the system of management in industry, commerce and finance, passing a large part of the administrative power formerly under the central authorities to the local authorities. All these, plus the fight against conservatism and waste in the course of the rectification campaign, have greatly stirred the initiative of the local authorities to found industries. The founding of large industries by the central authorities and medium and small industries by the authorities in the provinces, special administrative regions, counties and townships, their simultaneous development on the basis of over-all planning, division of work and co-ordination are also the mass line in founding industry.

Events in the past few months show that once the initiative of the local authorities in founding industry is brought into play, it immediately releases tremendous material forces. According to preliminary statistics, the provinces of Kansu, Shansi, Yunnan, Kweichow, Hunan and Honan have all planned to raise their industrial output value for 1958 by 50 per cent or more over 1957. In 1958 the rate of growth of local industries in the country will probably reach 37 per cent or even more. In Kansu, which has always been a rather poor province, the people, with the aim of building up industry, collected funds amounting to more than the total investment made by the state in the local industries in the last three years. They did this in a few weeks. Where the region is comparatively backward industrially, the initiative in building industry is also higher. Here one can see how industrialization has stimulated the people.

Studies made recently by the relevant departments of the Central Government show that there is great potential in the development of both medium and small local industries. There is a promising future ahead. In counties with adequate resources (mainly coal and iron), it is estimated that it is possible, within a few years, to build at least one small coal mine, one small chemical fertilizer plant, one small coal tar plant, one small iron smelting plant, one small cement works, one small power station and one integrated machinery repair plant. The construction of these factories will need a total investment of around 12 million yuan. On a county level it is not very difficult to raise that amount of money in about five years. Once these factories are built up, then industrialization of that county is a reality. There are over 2,000 counties in our country. According to present statistics, there are over 1,500 counties with coal resources and over 200 counties with iron resources. If every county builds up these industries the tempo of China's industrialization will be greatly accelerated and it is fully possible that we can build our country into a powerful industrialized state in less time than expected.

The basic task of local industries is to serve agriculture. They must also serve the big state industries, the people's daily needs, both in town and countryside, and foreign trade (mainly by processing farm produce and making native and special products for export). For the fulfilment of these tasks it is necessary first to destroy the notion that industrialization is a mysterious process, to carry out the mass line firmly and to establish industries through the efforts of the whole Party and administrative units at all levels. Cadres of and below the county level must be encouraged to learn to run co-ops and factories too. All the provinces and autonomous regions, while making every effort to fulfil the plan for a leap forward in agriculture, must strive to make the total output value of the local industries outstrip that of agriculture in five to seven years.

In making plans for the development of local industries, attention must be paid to the following points.

1. Over-all planning and the strengthening of leadership are needed in founding local industries. There should be, in the main, a division of work and co-ordination for industrial production, in the light of existing resources and the industrial foundation in the particular regions. Not only should there be a rough plan for the whole country, but also a rough plan for each province and autonomous region. At the same time, because of the changed economic conditions in the various regions which are building local industries, the distribution of the local industries must, in general, be planned in relation to existing industrial cities which will be the technical centres. Certain county seats may be chosen as base-points, linking the industrial cities with the various local industries of the county. The system of co-ordination should be widely established between different regions and enterprises, thereby forming an industrial network to integrate the individual enterprises with the plan as a whole, and big enterprises with the medium and small ones. To achieve all this, necessary arrangements should be made by the localities in the light of the actual conditions.

2. In developing local industry, the principle of running enterprises diligently and frugally must be followed. Factory buildings and equipment must make do with what is on hand; existing materials and manpower must be fully utilized with the aim of spending less and building more.

3. In building local enterprises, attention must first be paid to the construction of those industries which serve agriculture and large industries. Those industries serving

the needs of the urban and rural population should be properly developed in accordance with the available resources and markets. In general the newly built enterprises should mainly be medium-sized or small. Industries at and below the county level should, in the main, be small enterprises serving the needs of agricultural production of the county concerned.

4. With the exception of the relatively large and important projects which will be financed mainly by the central authorities, all other construction projects will be financed mainly by the localities themselves. Local funds will, in large part, come from the treasuries of local organizations and from the funds accumulated by the local industrial enterprises, the handicraft cooperatives and the agricultural producers' co-operatives. This year, in view of the fact that the agricultural co-ops and the peasants have already invested heavily in water conservancy construction, it is generally not advisable to burden them too much with investments in industrial construction. In raising funds for industry, the principle of simultaneous development of industry and agriculture must be strictly maintained. Therefore, care must be taken not to reduce the necessary investment in agriculture because funds are being collected to found industry.

5. Local industries at and below the county level may be varied in form. Roughly, there are the following forms: industries run by county authorities, by township authorities, those jointly run by county authorities and co-operatives, those jointly run by township authorities and co-operatives, and those run by co-operatives. Small industries run by agricultural producers' co-operatives should mainly serve their own needs, such as repairing farm tools, processing and manufacturing fertilizer from

local sources and processing some farm produce. Generally speaking, it is better for small industries in the countryside to take the form of joint administration by county authorities and co-operatives or those run by township authorities. It will be best if among the industries run by county authorities there is a multi-purpose factory because such a factory will easily adjust itself to the seasonal changes in the countryside and will also be better able to adjust the labour force according to co-ordinated plans and make more rational use of the technical equipment and funds. It will become the core of the industrial network in the countryside.

6. While developing local industry we must find out the actual conditions of the existing enterprises and make full use of their potentialities and expand or reconstruct them according to need. At the same time, the handicraft industry must also be reconstructed and developed. Attention must be paid first to developing it into handicraft production that serves agriculture and the needs of the people in the locality. Next, it is necessary to develop actively the manufacture of special handicrafts to meet the needs of both the home and export markets.

7. In view of the fact that this year most of the money, materials and manpower of the various regions will be devoted to the great leap forward in agriculture, we should mainly build small enterprises, especially those making improved farm tools, repairing agricultural machinery and exploiting non-ferrous metals and coal pits, which require small investments, take less time to build and bring quick results. As to those industries which need larger investments and call for more complicated techniques, this year the emphasis must be put

on making preparations for their future construction. Several experimental medium and small enterprises may be established in every province and autonomous region so as to acquire experience and create conditions for their future development.

The fine prospects for the industrialization of our country can now be visualized. The achievements of the big leap forward have shattered all the predictions of the pessimists and sceptics to smithereens by hard facts. We must exert our utmost efforts, press ahead consistently and achieve greater, faster, better and more economical results in the development of local industries. Let the flowers of local industry blossom in all parts of the country so that China will realize its socialist industrialization as soon as possible.

ARMY VETERANS RUN A PLANT

Li Hsing-fa

We had no equipment, little money and no technical experience. But after three hard years, we've got our Changhsing Refractory Plant in Chekiang Province on the road to becoming a first-rate factory.

Few dared to dream this was possible when we first started. Those who were friendly, worried for us. Those who were not so friendly, laughed at us. But we've pushed through every pass, and battered down the illusion that we couldn't learn intricate techniques.

STARTING FROM SCRATCH

In September 1954, a number of us veterans came back from Korea and Tibet, and returned to our home town — Changhsing County, Chekiang. Thanks to the education the Communist Party had given us, our first thought was not for each to build a little family or set up a little business for himself, but, like the "Cavalier of the Gold Star,"[1] to take part in our country's socialist construction.

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[1] Hero of a Soviet novel of that title by S. P. Babayevsky, telling how an army veteran succeeds in building a hydro-electric station in his native village.

Because China was then short of heat-resistant materials, 22 of us chipped in 3,700 yuan from our discharge bonuses to build a refractory plant. When news of this got around, many people in town were sceptical. "Forget it," they said. "You can't run a factory without capital, equipment or technical know-how."

Others felt sorry for us. "You haven't got much money. Use it for something else," they urged.

It was quite true that our few thousand yuan wasn't enough to build a workshop or a kiln, or even a big chimney. But the Party gave us strong support. The Party committee of Changhsing County did everything to encourage us. And the Civil Affairs Section and Military Service Bureau of the county gave us concrete assistance. This stiffened our backbone.

We 22 veterans formed a preparatory committee to take charge of the spade work. We didn't have enough money to construct a factory building, so we borrowed three old houses. We couldn't afford to build a kiln, so we rented one from a neighbouring pottery works. We had no implements, so we made wooden mallets and moulds by hand. Then we were joined by two skilled workers. They, plus the 22 of us, were the whole factory personnel. The director and the manager, chosen from among our number, also doubled as workers. After three or four tumultuous months, our factory finally began operating in three old houses.

At first we made only simple fire-clay spare parts, low-voltage insulators, and china clay. Except for our two skilled workers, none of us knew what to do. We could only offer them a helping hand. Most of us had never even seen refractory materials before, and the manufacturing process wasn't easy.

To make our first batch of products, all of us squatted beside that kiln for 15 days and nights. But our three heats all proved failures. It was like a douse of cold water on our heads. Because our stuff wasn't marketable, we soon used up our small cash reserve.

At this time, many people in town criticized us. They said we were "blindly messing around," that "army veterans would never amount to much." They guaranteed we'd "go broke in three months."

Some of our men began to waver; they wanted to break up and try some other line. Others said we ought to ask the Civil Affairs Section or the Military Service Bureau to help or get a loan from somewhere in order to tide over the difficulties. Although most of the men wanted to keep the plant going, they didn't know how.

That was when the Party branch of the factory rallied together all the more determined men to take a firm stand. It proposed methods by which we could become self-sustaining and solve our problems, and got everyone to discuss them. After a hot battle of ideas, we finally reached a common understanding. We realized that because we had no experience in industry, we were bound to run into difficulties. It was up to us to attack them boldly.

Everyone said: "Soldiers of the revolution don't leave the battlefield till they've won. We're certainly not going to run away from the struggle on the industrial front." Face up to the hardships and conquer them — it was that traditional fighting spirit of the revolutionary soldier which sustained us all. Those who had been hesitating now made up their minds to make the plant a success.

At the urging of the Party branch, we invested more money. Men sold their wrist-watches, their bicycles, their bedding, and so on; some even invested the last yuan of their discharge bonus. The Party branch raised the slogan, "Save every possible penny. Accumulate more fund for the factory." We economized on food and skimped on clothing. We took our meals from the plant, but drew no wages. We had rice only one meal a day; the other two, we ate gruel. Vegetables were cut to a minimum.

Our raw material was gone. We went into the hills and dug it ourselves. To save on transport charges, everyone — from the director to the cook — carried material from the hills to the plant.

The Party branch organized the dependants of those comrades who had families to help each other. They cut fuel in the mountains, and earned a little money with handicraft jobs. Men would take their food home from the plant and share it with their families.

None of us was afraid of hardship. We helped and encouraged each other. We were determined to make the factory a going concern. We studied and experimented day and night. Inexperienced, and with only the crudest equipment, we used our hearts' blood to manufacture.

At last, in the spring of 1955, we made our first good items. The unit that had ordered them tried them and was very satisfied. It placed another order with us for two hundred more.

We had fought our way through the first pass.

GETTING OUR THINKING STRAIGHT

When the going was rough, the comrades took it without a word of complaint. But as soon as we showed a little profit, some men found our methods too harsh. Opinions were divided. Most of the Communists and some of the non-Party members said we should eat the bitter now and save the sweet for later. That is, continue to skimp on ourselves and accumulate more capital to build a basis for a big expansion in production.

A few others said now that our production was normalized we ought to start paying wages. One or two wanted to take back their investment and set up small businesses of their own.

It was clear that if we distributed our small reserve then, the factory would still be in difficulty. It would teeter on the edge of collapse. We would have to continue to rough it if our production was to expand. The money had to be ploughed back into the business. The fate of the factory hinged on which of these two views would win out.

The Party branch called the Communists together to discuss this question, and had them go among the others to get their ideas. Nearly everyone said, "We ought to act here as we did in battle. The factory hasn't won final victory yet. How can we divide up that little bit of money?"

We called a meeting of the whole factory so that we all could talk it over. We gave a complete report of our finances. This made the situation much clearer. The few who had wanted to divide up the reserve, or who wanted to pull out, were criticized for their capitalist-type thinking. Strongest in their criticism were those comrades who had sold some of their belongings to help the factory get started.

They said: "We've pinned all our hopes on the development of the factory. Some people want to pull out just as our production is getting rolling. It's like breaking up a family!"

With the vast majority in agreement, we went ahead with our expansion. We built two high-temperature, down-draught kilns, a factory building, and bought some equipment. Now we had a foundation.

LEARNING TO MASTER TECHNIQUE

When we first started production we were only able to make ordinary refractory material. Before we could widen the variety of our output, we had to improve our technique. But could we? Many people doubted us, scoffed at us. They said: "Those ex-soldiers are rough, clumsy fellows. How can they manage intricate operations?"

But we didn't think there was anything so mysterious about technique. Our men plugged away at it with startling vigour. The skilled workers had apprentices, and the apprentices had apprentices too. This way everyone learned fast. Whenever we began attempting a new product, our skilled workers would make a sample, explaining as they worked, the rest of us copying them. Then we would try it on our own, the more advanced helping the less advanced. At regular intervals we also had a mutual inspection and appraisal of each other's work.

If we turned out a bad product we would hold a meeting to analyse the reason for our mistake and work out ways to correct it. If we ran into some particularly complicated problem that our "amateur engineers" couldn't solve, we would take it up with organizations in Shanghai like the Institute of Metallurgy and Ceramics, or the Hsinyeh Electric Furnace Works. We also got left-over imported materials from the big plants, and studied them.

Thus, in a little over a year, the technical level of the whole factory was raised a lot, and we trained four more experts. All the 22 veterans could now independently perform every one of our plant's 13 operations. Fifteen of the men could be rated as technicians, fourth to sixth grade. A few comrades could already read technological designs.

BOLD EXPERIMENTS

As our skill and the quality of our products improved, others' confidence in us increased. Because of the enormous expansion of our national construction and the widening scope of technological advance, various organizations wanted to place orders with us for a great variety of new and high-quality articles, especially those which China formerly had been unable to manufacture. In our factory, not only had we never made these products before — we had never even seen them. For our little plant, with its poor technique and old equipment, to turn out such products would certainly be very difficult.

Could we do it? Some of the men were doubtful. They said: "We're weak on technique, we haven't got a decent piece of machinery. It's madness to think we can make things as good as the foreign companies. We don't even have an engineer. The whole idea is impossible!"

They said we ought to keep going along peacefully, making the ordinary products we already knew how to manufacture. If we tried new things and failed, not only wouldn't we fulfil our plan — we'd waste our money and the factory would go broke.

It was true enough that we weren't at all sure we could make new products. But when our country needed them, how could we stand by and not at least try? Many units sent us orders by telegram; some factory agents even came with congratulatory banners all prepared in advance. Some asked us to ship by air freight before a certain date; they needed the things urgently to complete their construction schedule.

Stirred by our country's needs, we boldly accepted all the orders and began trial manufacture. Our method was to rely on the hard work and ingenuity of every man in the plant. Most of the new things we had never seen before; we worked only from plane-view drawings and order specifications. If we had an old foreign sample to go by, we considered ourselves lucky. Because we had no reference material, we couldn't afford to analyse the composition of the foreign products ourselves; the Shanghai branch of the Chinese Academy of Sciences did it for us. We found some foreign data, but none of us could read English. A middle school teacher in town helped us translate them.

We had no equipment for testing our finished products. We would send them to the people who ordered them and let them make the tests. Then, according to their reports, we would make improvements.

Our whole factory worked with true revolutionary ardour. In spite of our simple equipment and poor technique, we turned out very good products. Take, for example, the thermo couple tubes we made for the Shanghai Meter Company. They had been using West German ones before, with a heat resistance of 1,300 degrees centigrade. This wasn't high enough to meet their requirements. They asked us to produce something better. They wanted a tube that wouldn't go soft, that could withstand high thermo-shock and sudden extremes of heat and cold.

We experimented for over a year, meeting one failure after another. It cost us money. People made sarcastic remarks. But we weren't discouraged. At last, using unorthodox methods, we finally made one. It had a heat resistance of 1,750 degrees centigrade, and a thermo-shock resistance twice as good as the German product.

Then there was the high-temperature, molybdenum-wire furnace tube. It required a heat resistance of 1,870 degrees centigrade. Our down-draught kilns could only heat up to 1,400 degrees or more. We experimented for six months, and burned one kiln out, to no avail. But our workers never lost confidence. They said: "If foreigners can make this stuff, so can we." Thanks to the joint efforts of our workers and technicians, we finally succeeded in turning out an excellent high-temperature, molybdenum-wire furnace tube. Today, we supply fifty different factories with this article.

In January 1958, the Peking Shihchingshan Iron and Steel Plant and the Central Research Institute of Iron and Steel Technology experimented with the use of alumina balls in smelting iron, and were able to increase the size of the smelts by 4 per cent while using 4 per cent less coke. This was an important advance. None of the big plants they applied to were willing to undertake the manufacture of the alumina balls, so they turned to us.

We all knew it was going to be a very difficult job. The Party branch encouraged us, saying: "Perhaps others can't do it, but we can. As long as we don't hold any scientific process in awe, and study hard and dig in, we'll succeed."

Every man in the factory experimented making alumina balls, every man did research. After cracking the problem of sintering, we made our first alumina balls in March. In April we were in large-scale production.

There were also the crucibles for glass-fibre manufacture. Formerly, China had to import platinum ones from abroad, at a cost of forty to fifty thousand yuan each, and they were not easy to buy. We shattered the theory that "substitutes can't be found," and produced crucibles made of alumina that are just as good and cost only eighty yuan apiece.

In the past three years, using cheap "home-made" methods, and with help from many quarters, we have trial-produced and manufactured over two thousand types of new articles. This has helped our country save foreign exchange, and has been a definite contribution to our industrial construction.

STRIVING TO OVERTAKE BRITAIN

Our success in manufacturing new products has opened a broad future for our plant. More than four hundred large factories, mines, and scientific and chemical research units have become our regular customers. Our plant looks a lot different now. We have almost two hundred people and our workshops occupy ten thousand square metres of floor space. There's been a big improvement in our production, too. We turn out more than thirty times the value we did three years ago.

Lately, the whole plant talked over our second five-year plan. We modified it so that by 1962 we'll be producing goods worth 38 million yuan per year — 87 times our 1957 figure.

As to the quality of our products, we intend to catch up or surpass the best British products in from one to three years. Some of our more important items we will sell abroad.

Our experience of the last three years has made us deeply aware of several things: It doesn't matter if you're poor, or lack technical skill. Those problems can be overcome. The main thing is to break through the aura of mystery that has been built up around scientific processes. Liberate your thinking. We can do anything the foreigners can do, and many things they can't. We firmly believe that by following the general line for socialist construction promulgated by the Central Committee of the Communist Party — to exert the utmost efforts and press ahead consistently to achieve greater, faster, better and more economical results — we certainly will catch up with and outstrip Britain in a very short time.

After four years of hard work, the Changhsing Refractory Plant, which started from practically nothing, is now capable of producing first-grade fire-resistant materials

These three ramshackle houses were the only buildings the Changhsing Refractory Plant could find when it first started

TREASURES FROM RICE HUSKS

Wang Hsi-teh

In Changchow, Kiangsu Province, a small oil pressing plant stands on the bank of a river. This plant has no tall buildings, only a row of low simple houses. It has no up-to-date modern equipment and machines, only a few wooden presses operated manually. It does not even have a proper laboratory, for the few pieces of apparatus it owns are worth less than 100 yuan and are kept in a small room. There are no engineers or even technicians and the most educated person on the staff is a middle-school graduate, but even he has only recently learned the Latin alphabet.

But this small and seemingly inconspicuous plant is gradually becoming known far and wide. Since February 1958 the visitors, who have been coming in ever greater numbers, have included leaders of enterprises from neighbouring districts, townships and cities along the Peking-Shanghai Railway. Some people have come from as far as Canton and Inner Mongolia.

One cannot but wonder why people take such interest in the Wufengjun Oil Plant, which was formerly a joint state-private concern and is now state-owned. The answer is that this ordinary, small plant, with less than 100 workers, astonished everyone with its success in developing new products. Experimenting with rice husks, it succeeded in obtaining five important raw materials for the chemical industry — glass, furfural, acetic acid, methanol and pitch.

GOOD NEWS

In the past, the plant often did not operate to its total capacity for two reasons: it failed to thoroughly carry out the policy of processing for agricultural purposes and it was not near a plentiful source of oil-bearing crops. When it became a joint state and private concern, in 1956, production increased. Nevertheless the state still subsidized it to the amount of some 21,000 yuan a year which was used to pay the workers when it was not in full operation. This was something that both the management and the workers felt uneasy about.

In the autumn of 1957, a meeting of Communist Party activists was held in Changchow and in a short time an upsurge of production spread among the plants and enterprises in the city. This new situation inspired the workers and staff of the Wufengjun Oil Plant. They said, "Other plants are making greater and greater contributions to the state but our plant still has to ask the state for a subsidy. It's really a disgrace!" They wanted to keep pace with the production upsurge and rise with the others. Thinking of how to improve their work all the workers came to the same conclusion. The plant must change its policy and make more than just one product. But what should it produce? Neither the workers nor the management had a concrete suggestion, but the workers pointed out to the leaders of the plant that leaders of other factories often go out to visit and learn and they manage to turn out new products. The workers pledged to do any task if only the leaders would go out and learn what should be done.

Then the factory branch of the Communist Party called for ideas and suggestions and initiated a discussion by the masses on the plant's future development. Soon the workers of the whole plant were animatedly discussing new ideas. Some proposed that they should try to obtain oil from wild nuts gathered from trees, others suggested they make wood pressed from sawdust and wood shavings, still others wanted to make furfural or powdered chaff for cattle feed. This exchange of ideas and the general discussion helped the plant to ascertain the direction of its work — to undertake the production of several products. However, the question of what they should produce was still not settled.

The first experiment decided upon was to try to obtain oil from wild nuts. As they knew little about the use of wild nuts as raw material for oil, men were sent to the Tientsin Vegetable Oil Plant to learn its experiences. But the Tientsin plant was a big one and its processes of production were complex and difficult, and could not be copied mechanically by a small plant. The men returned no wiser. Another trip was made to Chekiang, but still with little success. At their wits' end, the people in the plant decided to go ahead, using their own local methods, but several trials ended in failure.

The plant then decided to make furfural which was something many other factories in different places were producing. But was there a good market for furfural? The plant functionaries had no idea. In the end, Chiang Sheng-keng, the plant director, went to the Ministry of the Chemical Industry for information. A comrade from the ministry told him that this product was not suitable for a small plant to produce and he was advised to wait a bit before launching the project. When the director reported his findings, everyone was more confused than before.

Two attempts had come to nothing, but the people were not discouraged. "We might be a small plant, but we've got big ideas. We must succeed."

Soon, a great leap forward in production spread throughout the country. The workers were very enthusiastic, eager to be doing things, asking their leaders to provide them with plans of action. It was then that they read a news item in the Shanghai *Laodongbao* of December 29, 1957, saying that rice husks could be made into glass. The article aroused much interest in the plant. Rice husks could easily be obtained in large quantities and at a very low price everywhere south of the Yangtse. If it really could be used to produce glass and furfural, the economic value of such a product was indeed high. Of course there were problems to be solved, such as: what are the methods used to obtain glass, furfural and other products out of rice husks; what do these things look like and do they have a good market. Nobody in the plant knew how to solve these problems. They decided to send Tsui Hung-sheng, the head of the finance department, to find out the answers from the Shanghai Export Company.

"Have you brought a sample of your new products?" Tsui was asked at the export company. Poor Tsui was dumbfounded. None of them in the plant had any idea what the new products looked like, to say nothing of producing samples.

The man at the export company told Tsui that the production of glass and furfural from rice husks would be extremely worthwhile because these products have a high value, could be used for many purposes and have a great future. He also said that at present this kind of production was found only in Italy and if the plant had the conditions, it should try to produce on a large scale. When Tsui returned and related what he heard, everyone felt much encouraged and eager to start.

A CONFLICT OF IDEAS

The plant decided to draw up a plan of development and make a list of the new products to be attempted. On January 10, 1958 a meeting was called in which Party, management, trade union and Youth League functionaries took part. At the meeting, a list of products which the plant was to try to make was drawn up and the two products at the top of the final list were composition boards and glass. There were many advantages in choosing these two: the raw materials were cheap and easily available, and the cost would be low; the investment need not be big and the market was good; it would also mean full employment for the plant staff. Success in the production of these two products would change the situation of the plant completely. However, the functionaries were not all thinking along the same lines. Many felt that the manufacture of composition boards was fairly simple technically and would involve only a few processes, therefore they were more confident of success, but the making of glass and other products from rice husks was another matter. No one knew much about it. The lack of technical knowledge was a real difficulty and that was why people were dubious about the chances of success.

Heated and tense debates went on during the meeting and the conflict of ideas was sharp. Tai Chen-ho, former deputy Party secretary of the plant, said, "We are all simple people. We had better not fix our minds stubbornly on making glass out of rice husks. It's better to stick to the pressing of oil. At best we might just try making composition boards." Yueh Chun-fu, the vice-chairman of the trade union committee, also lacked confidence. "None of us know much about technique," he said. "This is no simple matter. We'd do better to use our energies for pressing more oil."

Chou Yuan-kuei, Party secretary of the plant, criticized them both. "It is impossible to succeed in building socialism without boundless energy and the determination to tackle difficulties." Chiang, the director, and Tsui of the finance department also felt sure that if they had confidence and were willing to work hard the plant would triumph over obstacles and succeed in its experiments. They were all for trying out the new products.

A careful account of the plant's budget was made. They estimated that as it stood the plant would have a deficit of about 9,000 yuan in the first quarter of 1958, but if the making of composition boards and the production of glass and other products from rice husks were successful then the plant would end the year not with a deficit but with a profit of 350,000 yuan, which could then be turned over to the state treasury. These figures and the exchange of conflicting ideas in the meeting resulted in the adoption of the decision to try to make composition boards and glass from rice husks.

Though a decision had been adopted, the lack of technical knowledge remained a practical problem and a real headache for the plant leaders. The workers were aware of this and they hastened to reassure the functionaries: "We are confident that we will eventually succeed, though there are obstacles to our plan." These words inspired the plant leaders and strengthened their determination to act. "We'll learn the technique in the process of working," they said with confidence.

As a practical measure, Tsui was sent to Shanghai to interview the person who wrote the article in the *Laodongbao* on the comprehensive utilization of rice husks for glass and other products. Perhaps he would know more and would be able to tell them the exact method of deriving these products. Tsui found the man in the Preparatory Office of the Shanghai Glass Company and was told that the article was based on the findings of an engineer by the name of Hsi who had succeeded in a laboratory experiment, but had not yet put it to the test of plant production. In fact nobody in Shanghai had attempted to try it in actual production.

Tsui went to Hsi in person. Having asked the condition of Tsui's plant, the engineer said there were two methods of deriving the multiple products from rice husks: the dehydration method which was expensive, involved large investments and the use of much electricity and the distillation method which was economical, did not need much equipment and required a smaller investment.

"You could try the distillation method," he said. "If you meet with any problems in your experiment, come to me and I'll do my best to help."

THE FIRST ATTEMPT

Following Hsi's directions, the plant began the experiment of making glass and obtaining other products from rice husks. After much consultation, it was decided to carry out the experiment on a small scale. The people taking part in the experiment found a small iron pail, filled it with rice husks and sealed it tightly, leaving only a small hole to which they attached a long glass tube. The pail was heated on an ordinary coal stove. To prevent a draught, the windows and door of the director's office, in which the experiment was going on, were tightly closed. The people taking part in the experiment sat round the stove and chatted as they awaited the result. "How long will it take?" "Should the fire be big or small?" "When should the products come out?" The director himself, who was one of the group, couldn't answer these technical questions either. "Let's heat it first and see. I don't really know." Some time later, Chou the Party secretary returned from a meeting. As soon as he entered the director's office he noticed a strange, obnoxious smell. "Have you produced something?" he asked eagerly. "We've heated the pail a long time but we haven't seen anything. There's only a queer odour." The Party secretary unsealed the pail to take a look and all the gas from the decomposed husks escaped. Someone remembered to say, "Be careful, don't get poisoned," and that was the end of the first unsuccessful attempt.

With the first failure, ideological problems cropped up again. "Don't tell me something like common rice husks can produce glass. It's pure imagination," someone said. Another meeting of responsible comrades from the

Party, management, trade union, and Youth League was called. "What do you think?" asked the Party secretary. "Should we continue with this experiment?" The director and Tsui gave determined answers in the affirmative. "We must. We will produce glass." "If we want to do a thing we must have confidence. There are difficulties of course, but we should find ways and means to overcome them." The Party secretary then asked everyone to think of ways to accomplish the task.

There was more consultation and it was decided that someone should go to the city industrial bureau and consult a certain engineer Pan. "If you use the distillation method you must install a cooling apparatus, otherwise you cannot get the gases emerging from your material," Pan told them. It was only then that they realized the gases must first be liquefied in a cooling apparatus. On inquiry they were told the apparatus could be bought for seven or eight yuan.

However, the people in the plant had their own calculations. Their plant was far from rich and they felt it was not worthwhile to spend seven or eight yuan on equipment when they hadn't produced a thing yet. They borrowed a cooling apparatus from a sister plant and began their experiment once again.

This time a big pail was used in which they put 40.5 catties of rice husks. After 12 hours of heating a total of 12 catties of brown liquid was produced. Everyone felt they had something at last. But the elements in the liquid must be separated before any substance could be obtained and for this purpose the plant applied to the city industrial bureau for money to buy the essential laboratory apparatus. Giving the plant its firm support, the bureau granted a fund of 450 yuan for experiments.

The people from the plant, however, were worried about spending so much money. They eventually spent about 100 yuan of the grant and used the director's office for their laboratory.

Though they now had a laboratory and some apparatus, they still knew little about how to separate a liquid mixture. What was to be done? Again they called on Engineer Pan of the industrial bureau for help.

Pan himself never specialized in this kind of work either, but he came. They poured the mixture into a big flask, inserted a thermometer and put it on the stove. When the thermometer registered 60 degrees no change was apparent, but when the thermometer went up to 170 degrees a yellowish substance appeared. "This is furfural," Pan informed them. "But where's the pitch?" someone asked eagerly. "The darkish substance is the pitch," Pan answered. Although they had obtained two products, both contained impurities. Nevertheless, pure or impure, these were samples of their new products and all felt exhilarated by this small success. A man was sent to report the good news to the district Party committee.

According to the article in *Laodongbao* which had started them in the experiment, the liquid mixture should give four substances, but where were the other two — acetic acid and methanol? The men asked Pan whether these two were still in the mixture. The engineer consulted his books and replied, "There's acetic acid all right but I'm afraid there is no methanol." The determined experimenters were not daunted. They reminded themselves that in Shanghai they had succeeded in obtaining all four. They were convinced that the mixture must contain methanol too, and they were determined to get it.

They began again for the third time. As Pan was away on business, they carried on according to his directions. The rice husks were heated for 12 hours and a lot of liquid was distilled, but somehow or other the fire got too hot and the pail cracked. "Perhaps this pail's no good. Let's try again with another one." The fourth attempt was started. Again a liquid mixture was collected, but due to poor adjustment of temperature the pail bursted again. The fifth time they only produced another cracked pail. That made them think. The pails were the property of the oil company and though the broken ones were not new they had to buy new ones to replace them. Such pails cost about 60 yuan each. When it dawned on them that the plant had to pay for three pails, that is 180 yuan, they began to worry. "Something's wrong," said the Party secretary. "We haven't got any of the products but we've already spent 180 yuan. What can we say when the leadership criticizes us?" He suggested that they use the fire extinguisher as a container. This was tried once but as the heat couldn't get through quickly, the experiment again ended in failure.

HELP FROM ENGINEER HSI

To solve the problem of separating the liquid mixture, Tsui was again sent to Shanghai to get advice from Engineer Hsi. The engineer examined the samples Tsui brought and told him that the mixture contained all four substances but none of them was up to standard. "You must pay close attention to the temperature," he said. "The matter appearing at 60 degrees is methanol, at 118 degrees, acetic acid, at 120 degrees, furfural and finally at 250 degrees, pitch."

When Tsui reported back on what Hsi said, his listeners felt bolder. Following Hsi's directions they began heating the liquid mixture again. This time they managed to get the acetic acid but methanol still failed to appear. Besides, the major problem of making glass had not even been tackled.

After further consultation everyone agreed that the core of the matter was still technical know-how. They must go to Engineer Hsi again for more detailed advice. In addition to Tsui, who had been making all the trips to Shanghai, Director Chiang and another comrade went too. Chiang told Hsi all the details concerning their experiment and asked all their questions. Hsi listened with absorbed interest, answering their questions one by one. "It's no use just giving you oral advice," he finally said. "You should have written reference material to look up. I'll find it for you."

They were delighted. Holding the copy of the material they had borrowed from Hsi with great care, they dashed back to their hotel. But when they opened the book they found it was full of symbols in the Latin alphabet, which they couldn't read and of course couldn't copy either. What should they do? Without the material how were they to produce the new products? But what was the use of copying it when they knew they couldn't read the stuff. Still, something would be better than nothing, so they decided to copy it to the best of their abilities. The three of them set doggedly to work, imitating the symbols without knowing what they meant and copied laboriously from 7 in the evening until 9 in the morning. They had promised to return the material to Hsi the next day and they kept their word by working through the night.

With the reference material in their pockets they returned to carry on the experiment, learning the symbols and chemical terms as they went along. Several trials were made according to the written directions but still the methanol and glass evaded them.

ON THE EVE OF THE SPRING FESTIVAL

The city Party committee attached great importance to the plant's experiments. Two days before the Spring Festival, Han Pen-chu, deputy secretary of the city Party committee, came to the plant for a meeting of leading functionaries of four oil plants to discuss the direction and development of these plants. Towards the end of the meeting Han turned to ask Chou, the plant Party secretary, "When can you produce a sample of glass made from rice husks?" Chou replied with great confidence, "When we come to the city Party committee to give our festival greetings we'll bring a sample."

To fulfil this pledge the experiment to make glass out of husk ashes began afresh on the eve of the Spring Festival. They had borrowed a high-temperature electric furnace to do this but to avoid damaging it they used it with great care, stopping the heat every six hours. This went on for 12 hours, but since the required temperature was not reached, the ashes failed to turn white —a sign of the desired silicon dioxide. People were getting impatient. Someone thought of the high-temperature furnace in the city glass factory and decided to ask for help there. As it was the eve of the Spring Festival, the glass factory workers were already on holiday and were not using their furnace. The plant made the necessary arrangements and immediately sent the vice-director over with the husk ashes. Soon the Party secretary followed with two others. They were warmly welcomed by workers of the glass factory who were glad to see the experiment carried out in their factory.

Now the experiment was continued. The first time the ashes were heated for six hours, but because the crucible containing the ashes was sealed during the heating, it cracked before the process was completed. The second time the crucible was left unsealed and the husk ashes were stirred from time to time. After eight hours of heating white bubbles began to appear on the surface. It was then two o'clock in the morning. Heating went on for two more hours and then most of the ashes turned white. This white stuff — silicon dioxide — was scooped up. As the four participants in the experiment worked by the furnace they chatted happily. "What an eventful evening this is," said someone. "We watch the old lunar year pass away as we experiment on producing a new product for our plant." "Yes," said the Party secretary, "when we finish this we should all write something about it in our diaries. In a few years it will be interesting to read what we have written." This was how they welcomed the new lunar year, for when they finished it was five in the morning.

GLASS AT LAST!

The silicon dioxide was placed in a test tube with the necessary material to form a batch. Further heating until

9:20 turned the batch into an amorphous solid somewhat like soft molasses. "Is this glass?" the eager workers asked an old glass worker who was helping them. "Yes, this is glass." The old worker was also excited to see the product at last.

He was asked to press some of the amorphous substance into glass sheets. Everyone was startled when the sheets turned out green in colour and rather murky. "According to our written material the glass should have come out transparent and colourless, why have we produced green glass?" A young worker from the glass factory ventured to say that perhaps it was because rice plants are green in colour. "No," said the old glass worker, "something is wrong with the batch." He was asked to readjust the batch. "Should I add high grade material or low grade?" Chou, the Party secretary, considered the problem. "Neither one nor the other, just make up a medium grade one for us." This put the mixer in a quandary. "We've always used one or the other in our factory, there isn't a medium grade," he said helplessly, but on second thought he added, "All right, I'll make up a mixture of the two kinds and see how it goes."

The Party secretary agreed. Though he was no expert his suggestion was excellent and the medium grade material which was used produced glass that was smooth and transparent. "This glass is of excellent quality," the old glass worker announced proudly, sharing the joy of the others.

Everyone was happy and exhilarated. "Old comrade," said the Party secretary to the glass worker, "the city Party committee is waiting for us to bring a sample of the glass when we go to give our festival greetings. Will you blow up a bottle or two for us?" The glass worker complied at once. He produced several bottles very quickly and these Chou clasped gently in his arms as he ran back to the oil plant.

"Come and look, everyone," he shouted as soon as he reached the gate. "We've succeeded in the experiment of making glass." But when they examined the bottles, they found cracks in all of them. Whatever was the matter? The four went back again to the glass factory to ask the old glass worker. "You took the bottles before they were properly cooled. Naturally they fractured in the cold wind outside." He blew up a few more bottles, this time allowing them to cool before he let them be taken away.

The appearance of the sample glass bottles in the plant excited everyone. "This is an occasion of double joy. We celebrate the success of our experiment on the lunar New Year's Day," said one worker. "Hard work and persistence will help us to succeed in any undertaking," was the comment of another.

The inspiring good news spread from the plant to the whole neighbourhood. People said in wonderment, "The Wufengjun Oil Plant has produced a treasure. They've made rice husks into glass." The workers formed a celebration team which went to the city Party committee to report the good news, carrying their samples along and beating drums and cymbals. As they marched along the streets, passers-by stared at them wide-eyed with admiration. "Rice husks are a real treasure," said one, sticking up a thumb to imply it was top-notch. "It's no simple task to obtain five products from common rice husks. Great indeed are the creations of the working class."

PRODUCTION STARTS

The plant was now eager to start producing glass from husks. The people also wanted to make another attempt to obtain methanol. For these purposes they decided to ask Engineer Hsi, the initiator of the comprehensive utilization of rice husks for glass and other products, to come to their plant and give them on-the-spot directions.

Armed with a letter from the Changchow city Party committee, the plant representatives went to the Shanghai Party committee. "How long do you want Engineer Hsi to come to you?" a responsible comrade there asked.

"Five months."

"What about three months?" Actually the plant people never hoped for such a long period so they hurriedly agreed, before anything else was said.

Engineer Hsi was approached by a comrade from the Light Industrial Bureau of Shanghai. "They are making preparations for plant production of glass and other products from rice husks in Changchow," he was told. "Not making glass yet, surely!" Hsi could hardly believe it. He figured that at most the oil plant might succeed in deriving the products by distillation. He didn't think they would succeed in making glass too. When he was told that the experiment at the Wufengjun Oil Plant had succeeded he was overwhelmed by a deep respect for the hard work and persistence of the workers in the plant. He said: "I would be glad to work with them at the oil plant and see that China's first comprehensive utilization of rice husks for the production of glass and other products is put into operation in the shortest possible time."

"The idea of trying to make glass out of rice husks blossomed in Shanghai," said the bureau comrade with a shade of regret, "but it bore fruit in Changchow instead of here."

When Hsi arrived at the oil plant he helped them obtain methanol from rice husks almost at once. From then on complete success followed in the comprehensive utilization of rice husks to produce glass, furfural, acetic acid, methanol and pitch, all of which are important raw materials for the chemical industry.

CEMENT FACTORY IN A MOUNTAIN VILLAGE

Chai Shu-pin and Wang Lin

About seventy *li* west along the highway from Hantan in Hopei Province lies the village of Shangtuancheng in Wuan County. This region is the eastern spur of the Taihang Range; the village is surrounded by mountains. South of the village a neat row of ten oval-shaped chimneys reach into the blue sky. Here stand the kilns of the Shangtuancheng Co-operative Cement Factory.

Shangtuancheng is rich in limestone, red clay, gypsum and coal. For hundreds of years the local peasants built kilns here and made lime. Centuries of digging limestone have gouged pits in the hills dozens of metres deep. The lime kilns, "sunk" in the pits, cannot be seen from a distance. The only thing to attract your attention to the ancient kilns is the rising white smoke caused by the blasting of the limestone.

The big leap forward in industry and agriculture in every county and township brought new life to the old kilns. Cement kilns have sprung up beside the lime kilns, tents cover the flats, animals turn the stone mill rollers. Pale green, first-rate cement is produced day and night.

"Home-made" methods are used exclusively in the cement factory. There are no engineers or technicians; no tall buildings, no electric motors, no ball mills, not even a Diesel engine or a donkey engine. But these people are carrying out the policy to build socialism "more, faster, better and more economically" as enunciated by the Central Committee of the Chinese Communist Party and Chairman Mao Tse-tung. With utter communist fearlessness, relying on nothing but their intelligence, their own two hands and centuries of experience in lime making, they cracked the secret of manufacturing cement. And not only low-grade cement, but high-quality cement with a compressive and pensile strength of 400 kilogrammes per square centimetre, that matches up to the best produced by the big factories.

The forerunner of the Shangtuancheng Co-operative Cement Factory was a lime co-op established in 1953; it became a co-operative factory in the beginning of 1958. Li Pen-yuan, chairman of the co-op, used to be the commander of the village militia. He was chosen to lead the factory because he was a skilled lime-maker. Li always took direct part in the work, sharing hardships with the other co-op members, running the co-op in a diligent and frugal manner as the Party directed. From a membership of 75 in 1953 and a fund of 2,100 yuan, by the time it became a co-operative factory in 1958 the co-op had built up a reserve of 60,000 yuan and had a production capacity of fifty tons of lime daily. The co-op had been officially commended by the county every year since its formation.

In April 1958 the county proposed a new and difficult job to the co-op — to produce cement. The entire county was building water conservancy projects, but there wasn't enough cement. Whether the county could supply itself with cement had become a key question in the big leap forward in agriculture.

To the leaders and the workers of the factory, cement production was something they had never dreamed of attempting before. They knew how to make lime; the families of some had been lime-makers for generations. But cement — some of them had never even seen it, to say nothing of making it!

No one would show fear in the face of the new task. Their motto was: "Think boldly. Act boldly. Turn the lime kilns into a cement factory."

Only two men of the hundred and ten-odd in the factory knew anything about manufacturing cement. Cheng Yao-tung and Wang Yu-shun had been sent by the county co-op federation in March to two cement factories outside the county for a short technical course. After they returned, Cheng and Wang, with help of the county and factory leaders, struggled together with the workers for several days and nights. Using lime, clay and gypsum, after 17 successive failures, they produced low-grade cement with a compressive and pensile strength of 260 kilogrammes per square centimetre.

The county immediately called a meeting at the factory of local township and co-op representatives, and the process was demonstrated and explained to them. Today, 36 townships in the county have cement factories. The big expansion of the cement industry throughout the county is based upon the success of Shangtuancheng.

No sooner had Shangtuancheng propagated its experience in making low-grade cement than it was called upon to produce cement of a high grade. This is a much more difficult job. It requires a kiln heat of 1,400 degrees centigrade, and the standards for lustre and plasticity are very exacting. The factory had no modern equipment or instruments for testing; only some crude kilns.

Again Cheng and Wang were asked to take charge. Cheng had gone only as high as lower middle school; later he had served as a book-keeper in a brick-making co-op. Wang had done administrative work; he had never been to school at all. They had seen high-grade cement manufactured in Honan, and had brought back samples of raw materials and some technical data. But Shangtuancheng didn't have the type of chalk used in Honan. To get such chalk, Cheng and Wang had to travel to over fifty villages in the surrounding mountains, guided by the old peasants.

Lacking equipment, they borrowed 16 fire-bricks and built a little stove, blowing up the flame with a hand-bellows. During the day they searched for materials; at night they experimented. But because their chalk wasn't pure enough, and because the formula and the temperature of the stove were faulty, dozens of experiments all resulted in failure.

Thanks to the enthusiastic support of the leaders and the workers, Cheng and Wang were not in the least discouraged. They made up their minds: One hundred failures or one thousand — they wouldn't stop until they learned how to make high-grade cement. Gradually, they came to see that the main trouble lay in the impurity of the chalk. Then they noticed on a bag of high-grade cement made by a factory in Tangshan the words "silicate cement." They remembered their teacher had told them that silicate cement is made with limestone.

Limestone, when heated, becomes lime, they thought. If Tangshan can make cement with limestone, why can't we try it with lime? Replacing the chalk with lime, they started experimenting again. Each time they failed, they analysed their mistakes, and changed the formula a little. Beginning with eight catties of red clay to every hundred catties of lime, they gradually increased the proportion until the clay was up to 40 catties. The amount of anthracite for heating rose from 13 catties to 15. After more than eighty experiments, they produced a cement which proved that the proportions they were using were correct.

But the lustre and the plasticity weren't good enough. Cheng and Wang began improving the temperature control and the manufacturing process. The one hundred and thirty-second time after the first experiment with the chalk, they made a cement of the desired pale green. After pulverizing and sifting they tested it with local methods, then sent it to Hantan City for tests by the Municipal Construction Bureau. The cement proved to be of high quality with a compressive and pensile strength of 400 kilogrammes per square centimetre. Its lustre and plasticity were as good as the most famous brands.

The news that top-grade cement could be made with "native" methods brought Shangtuancheng to the attention of every administrative leader in Hopei Province. Many responsible comrades visited them, praised them and urged them to expand. The county authorities supplied them with a boiler and steam engine, and were planning to give donkey engines and blowers. It asked that they immediately construct ten shaft kilns with a daily production capacity of two tons of high-grade cement each.

The whole factory was delighted. Many workers said, "We're going to install machines and build a big modern plant!"

But the leaders of the factory had not forgotten the old tradition of working diligently and thriftily. Their idea was: If we can manage with simple methods, we'll do without mechanization for now. Let's save money where we can, and start production as quickly as possible. . . . This approach was praised by the county leaders, who encouraged them to give full play to their creativeness with the materials at hand.

The question was whether they could get along without mechanical blowers for the kilns. If they used a blower and donkey engine for each of the ten cement kilns, the cost would run into a huge sum. Besides, these machines were in short supply. It might take a long time before they could buy all they needed.

What was the alternative? They invented a hand-driven wheel that turned a belt that rotated fans in a wooden gourd-shaped blower. It was tested and it worked. This was much cheaper than the mechanical blowers.

But the leaders still weren't satisfied. They said it wasn't cheap enough, and it consumed a lot of physical labour.

Li Pen-yuan, the factory director, had been wondering for a long time why the cement kilns couldn't be heated by natural wind, as the lime kilns had been. Nine of the new kilns were already built when he made his proposal. It immediately was given the support of the county chiefs.

That same day, Li called together eight or nine old lime-kiln technicians and discussed the problem with them. They said: "We brought draughts into the lime kilns when they were in deep pits. We surely can do it with cement kilns that are on level ground and exposed to the wind on all sides. What do we need mechanical blowers for?"

The old technicians promptly set to work. They built a chimney two and a half metres high on each of the square shaft kilns, and changed the one small draught hole at the base to four large vents — one on each side of the kiln. When the kiln was fired, they plugged the hole furthest from the wind and left the others open. No matter where the wind came from, it created a powerful draught, much bigger than a mechanical blower could produce. The kiln quickly heated to the temperature required for high-grade cement making — 1,400 degrees centigrade.

Without spending a penny on machinery, they solved the problem of draughts for cement kilns. The simple method evolved by the workers of the Shangtuancheng Cement Factory is an important technological contribution to the manufacture of high-grade cement.

WE BEAT BRITAIN IN BARIUM CHLORIDE[1]

In response to the call of the Central Committee of the Chinese Communist Party and Chairman Mao Tse-tung to "catch up with and surpass Britain in 15 years," the workers and staff members of the No. 5 Section of the Szekung Chemical Works in Szechuan, led by the factory Party committee, exerted their utmost efforts, and succeeded in surpassing Britain in the quality of their barium chloride.

Barium chloride is a new product for our plant, first trial-produced in 1957. It was made from materials such as dross from the preparation of salt. It has many uses and is much needed in the production of insecticides and pigments. At first it was sold only on the home market. Exports, on a trial basis, did not begin until the last quarter of 1957, but because of its poor quality, the sales were poor. Originally it was planned that its production for 1958 would be limited. In the spring a great leap forward swept the whole factory under the slogan of "catching up with and surpassing Britain in 15 years." All sections of the factory put forward targets for doubling and re-doubling their output. The cadres and workers of our section producing barium chloride were crestfallen since our production was limited. "Other fellows are leaping forward," someone said, "and we're leaping backward." "Why, we can easily do our present job without effort." They all asked for "a chance to become real heroes."

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[1] This article was written by the Chinese Communist Party Branch of the No. 5 Section of the Szekung Chemical Works in Szechuan.

Just at that time, a letter from the British Imperial Chemical Industries was forwarded to us by the Shanghai Import-Export Corporation. The letter said that the barium chloride we produced was no better than the third-rate products of the British Empire, adding that they were not and would not be interested in such products, which, judging from their coarse quality, were turned out by backward handicraft methods. This letter was sent to our Party branch by the factory Party committee. The Party branch immediately called a meeting to study this question and though everybody was offended by the arrogant tone of the letter they still proceeded to discuss this matter with great patience. The Party branch decided to pass around this "letter of challenge" among the workers of the section for further discussions. The secretary of the Party branch first addressed a meeting of workers of the section. British capitalists, he said, had sent us their "declaration of war." They were just as arrogant as before and they hoped to have a trial of strength with us. He read the whole letter to the meeting and asked if we would accept this challenge. Everybody was angry and many of them jumped to their feet and said: "So, even now they still hold the Chinese working class in contempt. We'll have to beat them. We Chinese have now stood up and we must go far ahead of the imperialists." Others said, "We can make the high mountains bow and streams give way; we shall also beat Britain in the quality of barium chloride." The Party secretary told the meeting that now there was a concrete goal to aim for and once our product surpassed Britain in quality we could find an export market for it and production would not be limited. The challenge was accepted.

It would never occur to the British capitalists that their letter had aroused the enthusiasm of the Chinese workers for improved production. A fierce battle to beat Britain in the quality of barium chloride was on.

Everybody was in high spirits as the fight began. But how to raise the quality of barium chloride was still a problem. It was learned that the first-rate barium chloride made in Britain contained 0.035 per cent calcium whereas our product contained 0.2 per cent. Another problem was that some of our technicians still had blind faith in the technical level of the Western capitalist countries. One "arithmetic-minded" engineer put it this way: "Don't you know how long Britain has been turning out barium chloride and how long we've been doing it? They've been doing this for more than 100 years while we trial-produced barium chloride only last year. What equipment do they use in their production and what do we use? Look at these jars and pots in this room and our bare hands. Are these a match for the mechanized production in Britain?" Those who had conservative ideas were also worried. The calcium content of our product was five or six times greater than the first-rate British products. It would not be easy to catch up with them at one stroke. But the vast majority of the workers thought differently. "The honour of our motherland and the dignity of 600 million must never be challenged by the imperialists. Since our elder brothers in the Soviet Union can shoot sputniks into the sky, why can't we surpass Britain in the quality of barium chloride? No force will shake our confidence and determination."

With the aim of shattering superstitions and conservative ideas, the factory Party committee immediately put forward the following slogan for action: "Co-operation between the leadership and the masses; co-operation between the technicians and the workers; drive with patriotic fervour to add glory to the motherland, the people and the Party; battle hard for a week to surpass Britain!" It was also decided that the leading cadres, together with those of the Party branch of the section and the technicians should carry out small-scale experiments on making fine barium.

The secretary of the Party branch, the foreman of the section, engineers and workers all went into action, working day and night and made four experiments. The first time they failed because the concentration of the solution was unstable, and the boiling point was sometimes too high. The second trial was also a failure because of an excess of iron in the contents. Because the water was not properly used they failed for the third time. But they were not at all discouraged; they continued to learn from the failures. They put on a dogged fight for six days and nights, supported and encouraged by both the factory Party committee and the workers. At length, when the laboratory sent them the analysis of the product of their fourth trial, they found a note with the following words: "Calcium content of the barium chloride under test: 0.03 per cent; superior to the best British product." When this happy news came everyone was excited. The workers immediately informed the factory Party committee that the quality of our barium chloride is now higher than the British products. But the "arithmetic-minded" engineer waved his hand and refused to believe what he was told. "I know the level of competence of our own laboratory. Don't tell me they can be accurate to such a minute percentage!" But when the sample was sent to the Shanghai Import-Export Corporation and the State Commodity Testing Bureau for re-examination, the results were all the same. It was decided that from April 1958 this improved product would be exported in large quantity.

In a short time our barium chloride began to make a name for itself on the world market and many firms in West European countries sent in their orders. The Shanghai and Tientsin import-export corporations sent us letters of congratulation. One such letter says: "The first-grade barium chloride newly produced by the Szekung Chemical Works is up to the highest standard. So far no products of better specifications have appeared on the world market." And even the arrogant British Imperial Chemical Industries, which once showed no interest in our barium chloride, placed an order with the export firms for our product. Confronted with hard facts, the sceptical engineer was nonplussed and now it was the workers' turn to teach him some arithmetic: "We've surpassed Britain's 100-odd years in six days. Twenty years are concentrated in one day. The prediction made by Karl Marx has been realized by the Chinese working class." One of the workers was moved to write a few lines on this subject: "Six days and nights! That's 144 hours. Our barium chloride is superior to the British make. The East wind prevails over the West wind. You may have had over a century's experience in industrial construction but it has taken us only six days to surpass your barium chloride."

There are still difficulties in the mass production of barium chloride. Our equipment is simple and primitive and most of the workers are inexperienced. But no difficulty can ever make our heroes surrender. In the spirit of spending less and achieving greater results, our workers made do with inferior and simple equipment and fully tapped the potentialities of the existing materials. In a dozen days, they completed all the preparations for mass production.

When the mass production got started, the Party branch made another call: "Think and do things boldly —carry out renovations daringly — continue raising the quality of the product — cut down the cost and produce more!" The Party members initiated a mass emulation drive among all the workers of the section. Chang Shao-wu, a Party member, invented a "five clean" working method for the purpose of reducing the insoluble substances to a minimum and continuously raising the quality of our barium chloride. Chen Li-hua, a Youth League member, invented the method of "bamboo crystallization" which greatly shortened the time needed for crystallization, enlarged the area of crystallization and shortened the cooling period, thus increasing output.

With politics as the guide, with the aid of technical innovations and inspired by the general line for building socialism — "exerting the utmost efforts and pressing ahead consistently to achieve more, faster, better and more economical results" — the workers of the entire section produced a large quantity of high-quality barium chloride. The output plan for 1958 has been raised from the original 1,350 tons to 2,700 tons. But the battle is not yet over — we are striving to produce more fine barium.

HOW INDUSTRY WAS FOUNDED IN A FARMING CO-OP

Ma Pao-shan

Under the leadership of the Communist Party an upsurge of industrial growth has been developing, since 1957, in the Hanchiawa Agricultural Co-op in Tinghsien County, Hopei. By May 1958 it had built up the following plants which have all gone into operation: a small power station, a cement works, a farm tools repair shop, a shoe-making factory and seven sewing groups. Together with the brick kilns, the chemical sugar refinery, the vermicelli factories, the carpentry shops and other plants set up previously, these productive units, both large and small, made a total of 54. A plant for processing farm produce, which will deal with oil pressing, crushing things, hulling rice and cutting grass, is under construction. Plans call for another small chemical fertilizer plant to be built in 1958. In addition, telephones have been installed in every village and loudspeaker systems were set up. Thus, in 1958, this co-op has, in the main, fulfilled the following tasks: electrification of the irrigation system, mechanization of processing farm produce, mechanization of ploughing, and the completion of telephone and loudspeaker networks.

"HARVEST LESS THAN YOU SOW"

The Hanchiawa Co-op consists of nine villages with 1,135 households and 5,707 persons and 12,719 *mou* of land under cultivation, or an average of 2.2 *mou* per person. Most of the land is sandy and is described by some of the older peasants as land which yields less than what is sown. Before liberation, as a result of exploitation and oppression by the landlords, there were 800 households of either poor peasants, farm hands or lower-middle peasants, constituting more than 70 per cent of the total number of households. Among these more than 90 households, 8 per cent of the total number of households, lived by begging. People there used to sing a song which says:

If you're lucky enough,
You'll get something to eat in autumn;
If luck is against you,
You'll have nothing to eat at all.

The poor peasants and farm hands often had to leave their homes and died in strange places because the ruthless exploitation and oppression by the landlords were too much for them to bear. After liberation, under the leadership of the Communist Party and Chairman Mao Tse-tung, the peasants overpowered the landlords, distributed the land among themselves and for ever freed themselves from exploitation. Mutual-aid teams were set up in 1949 and in 1952 some of them formed a small co-operative which grew from eight households to 16. In 1955 it was turned into an advanced co-op. Production increased and the living standards of its members improved greatly. In 1952 the average output per *mou* was

250 catties but it was raised to 412 catties in 1957, an increase of nearly 70 per cent. But there was still a long way to go before this co-op could reach the output equal to that south of the Yellow River (500 catties), or the output south of the Yangtse (800 catties) as envisaged in the National Programme for Agricultural Development (1956-1967). What was to be done? This was the challenge presented to the Party organization of the Hanchiawa Co-op.

WALKING ON BOTH LEGS

In 1957 there was not enough rainfall and in the spring there was a drought. The five donkey engines and four Diesel engines at the disposal of the co-op were not enough to water all the land. At this critical moment the Party organization mobilized all its members and the members of the co-op to fight against drought in an attempt to prevent the crops from withering. At the peak of the struggle many people worked day and night while some women worked until midnight, pushing water-wheels during the day and milling corn and feeding the hogs at night. Some people, however, thought of beating a retreat and certain well-to-do middle peasants even wanted to quit. Some naughty children taunted the peasants shouting: "Hey, what sort of food do you have?" "You eat potatoes." "What kind of work do you do?" "Your work is to push the water-wheels." After a month's hard work, everybody was tired and exhausted, but there were still 26 *mou* of land not getting a drop of water.

At the wheat harvest, though all the soil was of the same quality, the yield per *mou* on the land irrigated by machines was 57 catties higher than the land watered by man and draught animals. Estimates showed that if all the land had been irrigated by machinery in 1957 there would have been an increase of 760,000 catties in grain, an average of one hundred catties extra for every person. A 72-year-old peasant said: "My land is a 'business-like land.' Experience tells me that it won't grow anything unless there is plenty of water and manure. This year I will not ask for a bonus. Let's save some money and buy more machines." Some co-op members had also realized the advantage of mechanized irrigation, but were worried that the machines would break down. So they said: "Let's find some really good machines. It would be wonderful if irrigation could be mechanized."

It had long been the desire of all the co-op members to free themselves from unnecessary labour. Aside from the battle against drought, there were other heavy jobs such as the maintenance of the ridges and ditches, wiping out the four pests (flies, mosquitoes, rodents and grain-eating sparrows) and manuring the fields. The women were so busy they didn't even have time to make a pair of their favourite cloth shoes or mill more cereal than they needed for just one meal. When a new screw for the tractor or other new type of farm tool was needed someone had to go to town for it. This not only wasted money, but also time. It was decided that in order to increase agricultural production and raise the incomes of the co-op members something must be done to mechanize and electrify the irrigation and farming. Very soon a plant for processing grain, a machine repair shop and a shoe-making factory were set up.

After studying the 40 points outlined in the National Programme for Agricultural Development, the leading members of the general Party branch committee felt it was all the more necessary for industry to support agricultural production. They realized that industry and agriculture must be developed at the same time, that it was necessary to walk on both legs, to replace or lighten heavy manual labour with electric power and machinery. It was especially important to free the labour power of women who made up more than half of the co-op members capable of doing farm work. It became clear that the founding of industry by the co-op was essential to help agricultural production and create conditions for the technical revolution in agriculture.

ESTIMATING TWO METHODS

The task confronting the co-op was quite clear: to effect a big leap forward in agriculture, a big leap forward in industry was necessary, for that alone could bring about the desired advance in agriculture. But the question was which one was to come first, electrification of irrigation or mechanization? The leadership was also not very sure what sort of machines and what sort of industrial plants were to be bought and founded. They began to make an accounting of all the factors: industry and agriculture, production and daily life, the present and the future, and from the economic balance sheet they went on to work out the political factors.

The actual way it worked was the following: At first they thought of mechanizing irrigation by buying twenty-five 7.5-h.p. donkey engines and another twenty-five 4-inch pumps at a total cost of over 100,000 yuan. Each donkey engine, watering 38 *mou* of wheat fields in 12 hours, would consume 500 catties of coal. So 25 such engines would need 12,500 catties of coal which had to be shipped to the village from the town every day by 12 carts with 24 draught animals. Furthermore, two men would be needed to operate each of these engines. The cost for watering the land by donkey engines was figured at 0.29 yuan per *mou*. This would not do. Then they thought of trying electrification first. The cost for a power generator (a 135-h.p. Diesel engine with a capacity of 84 kilowatts), together with expenses for poles, wire, etc., would come to a sum 10,000 yuan greater than the total investment for donkey engines. But irrigation by electricity means setting twenty-six 2.8-kilowatt electric motors in motion, and the water pumps powered by each motor can water 70 *mou* of land in 12 hours, or 1,820 *mou* in a day. This means that over 80 per cent of the co-op's land could be watered. The same number of pumps (25) propelled by donkey engines can only water 800 *mou* of land a day, or about half as much as the amount of land watered by pumps driven by electric power. The cost for watering land by electric power was only 0.17 yuan, 0.12 yuan cheaper than the cost of donkey engines. Furthermore, electric power can also serve the flour mills, crushers, hulling machines and grass-cutters of the farm produce processing plant. This will save 70,000 man-work days in a year which, when transferred to farming, deep-ploughing and collecting of manure, can increase grain output by 130,000 catties, worth about 13,000 yuan. Even though the investment is a bit larger, it is worthwhile to build a power plant because it benefits agriculture, industry and the day-to-day life of the co-op members. When irrigation is done by electric power, 59,325 man-work days and 31,770 animal-work days can be saved, which, when used in agricultural production, will increase grain output by 372,000 catties a year.

MACHINERY RATHER THAN MEAT

The Hanchiawa Agricultural Co-op decided to collect the funds for construction mainly on its own and it mobilized the masses to finance and found industries themselves. The construction of the power plant, sinking wells and buying machinery will cost the co-op 130,000 yuan. When the masses were asked to make investments, they were sceptical at first of the power plant, wondering if "the poles and the wires" could be used to water land. The general Party branch asked the secretary and members of its committee to explain the advantages of the power plant at both large and small meetings. A technical worker in the village who knew something about electricity was asked to give lectures. All the Party members were assigned the task of publicizing the advantages of electric power so that everybody would be informed. Because of the political and ideological work carried out, all but a few co-op members who still had doubts, were convinced. Some of them said: "If what is said is true, better save money for machines even though this means no meat for a while." The money invested by the people amounted to 33,000 yuan; the common reserve fund of the co-op was 40,000 yuan; money converted from other sources amounted to 24,000 yuan, making a total of 97,000 yuan. This means that funds raised by the co-op members constituted 74.6 per cent of the total investment. The 26 mechanized wells which cost 10,800 yuan, electric motors and pumps bought at a cost of 11,500 yuan, sheds to house the pumps built at the cost of 2,500 yuan, the installation of poles and wires that cost 7,800 yuan, the installation of the loudspeaker system and the telephones which cost 1,750 yuan, all were financed by the co-op members who made investments either in cash or in kind, such as timber and bricks.

On the day the power plant was completed and went into operation, the noise of the motors was heard everywhere and the co-op members saw water gushing out from the wells with their own eyes. They were as delighted and excited as when they heard of the first sputnik launched by the Soviet Union. Everybody went outdoors and told each other the news. They flocked to see the new power plant and the wells. In April 1958 when the second collection of funds in the form of savings (loans for a period of one year with interest paid at the same rate as the bank) started, the masses were even keener to make investments. A demobilized armyman, for instance, sent in a deposit of 600 yuan, the money which he received from the army when he retired from service. This time the total amounted to 70,000 yuan and together with the first investment made by the people, it ran to more than 100,000 yuan. This means that every household had invested an average of 100 yuan.

The leadership of the general Party branch and the co-op members had had one misgiving after another which were gradually dispelled. At first the question was whether or not they should found industries. The second question was which industries they should set up. When these problems were solved they again worried that their superiors would not give their approval. When approval was granted they did not know where to get the money. When money was collected they were afraid that all the machinery had been sold out. When the Party organization decided to send someone to Tientsin to buy the machines many co-op members came to the office with the same question: "Have we got them all right?" When the member returned from Tientsin some co-op members greeted him with, "How about it?" Before he could finish his answer, an old man on the wrong side of 60 clapped his hands and shouted for joy: "How wonderful! When you've started the machines, we'll give you a hand." This shows how happy the people are to have machinery, how anxious they are to free themselves from heavy manual labour, and how eagerly they are looking forward to the happy future.

LEARNING TECHNIQUE

Although the co-op was very keen to found industries, they lacked experience and technicians. If this were not solved, it would affect the progress of industrial construction and even the plan for a leap forward in agriculture. What should they do? Following the instructions from the higher Party organizations, they proceeded to train their own technicians.

Some experts were invited to work for the co-op and pass their knowledge on to the members. During the construction of the power plant six young men were sent to work with the experienced electricians who had come to build the plant. They attended lectures in the evening and worked as apprentices during the day. Thus, in the three months it took to install the equipment, they learned how to connect wires on the poles and do maintenance work. To train operators for the power plant two other young men were sent to the county town to work in its power station for a month. In this way, with the encouragement and help of the Party and through learning from experienced workers while working, they succeeded in building up their own power plant and training their own skilled workers in this field.

Another measure taken was to find all the old technicians among the people. Seventy-four retired workers and armymen who had some technical knowledge were found among the co-op members. They included electricians, carpenters, blacksmiths and cement and telephone workers. Their skills were all used to meet the needs of industry. These people are now able to use their initiative to the utmost in various technical fields. Take Tao Fa-ling, a Party member, as an example. He was a retired electrician, formerly of the Chinghsing Mining Administration. He was selected by the general Party branch as one of the men entrusted with the job of founding industries. Since then he has played a very important part in industrial construction. Today, under the leadership of the Party, he has become the chief technician in charge of the power plant and some other industries.

Attention has also been paid to raising the technical level of the people and popularizing scientific knowledge. With the leap forward in agricultural and industrial production both the cadres and co-op members urgently demanded more technical knowledge. Many veteran cadres of the co-op were of the opinion that without studying technique they could hardly give effective leadership in production. Quite a few of the co-op members realized that as new socialist peasants it was necessary for them to learn techniques. After the rectification campaign and the leap forward in industry and agriculture the demand for technical education increased. At first the Party organization did not know what subjects would be best nor how to go about it. Later, with the help of concrete instructions from Comrade Wang Hung-ju, First Secretary of the county Party committee, an agro-technical school was founded, using the training class for donkey engine operators that had been set up some time ago as a basis. This was something entirely new for the co-op members. Then the school added some language courses to the lectures in politics and technique which were the main subjects.

The principle of teaching and learning is to learn what is needed in work. Efforts are being made to combine politics with work, theory with practice. Technical knowledge is popularized and the level of techniques raised. At the same time as the people are using technique they study and increase their basic knowledge. With these principles in mind the technical courses included agriculture, animal husbandry, hygiene, electrical engineering, mechanics, tool repair and assembly, sugar-refining, sewing, etc. One hundred and twenty students, or 25 per cent of the total school enrolment, joined the courses on industry. Among them were the secretary of the general Party branch committee, deputy secretaries, members of the general Party branch committee, the director of the co-op, the secretary of the Youth League branch, the director of the women's association, heads of production brigades, heads of production groups and co-op members.

In order that people would not pay more attention to industry and less to agriculture, and to ensure that the studies would be combined with one's own field of work, the general Party branch stipulated that all leading cadres take courses connected with the work they were in charge of. For instance, those who were in charge of the power plant should study electrical engineering, those who were in charge of agriculture should take the agricultural course, etc. Both the secretary and deputy secretaries of the general Party branch committee were required to take two courses — electrical engineering and agriculture. They have all bought textbooks on electrical engineering and begun to learn the ABC.

After the school was opened it was recognized that the principle of studying technique, with emphasis on politics, was correct, that it was the proper way of training technical workers and a new type of peasant, that it was the concrete road to becoming red and expert as the Party had instructed. Among the 54 students taking the course in electrical engineering, two are now able to draw up a draft diagram of the switchboard, to install electric motors and pumps and repair the machines so efficiently that the work does not stop, eight are capable of stringing up electrical wires and carrying out maintenance work and the rest of the students are at least able to operate electric motors and pumps. Although this school is still in its earliest stage, it has already become closely linked with production and the lives of the co-op members. Everybody likes the school. Leading comrades from the higher level Party organizations also study in the school when they come to work in the co-op. The First Secretary of the county Party committee joined the agricultural classes. Now the co-op is making every effort to improve the school.

HOW TO RUN INDUSTRIES

The founding of industries by a co-op is something new. The Hanchiawa Agricultural Co-op had no previous experience in this, yet they felt that the key problem in running industry is over-all planning.

The industrial plants are mainly run by the co-op, with a few exceptions which are run by the individual villages and production brigades, so as to meet their actual needs. At present, all enterprises serving the whole co-op such as the power plant, the farm tool repair and assembly shops, the integrated plant for processing farm produce, the brick kilns, etc. are all run by the co-op. Those directly serving the individual villages, such as some cotton-ginning mills and pottery workshops, are run by the villages themselves. But some workshops, such as the vermicelli factories and oil-pressing workshops, even though they directly serve the villages, are run by the production brigades because it is simpler.

Another form of running the enterprises is known as the joint operation. For instance, the cotton-ginning mill of the No. 4 Village and the oil-pressing workshop of the No. 1 Village are financed and supplied with raw materials by the co-op, but they do the processing themselves. This is the way it works: cotton owned by individual co-op members is collected by the co-op which sends it to the mill for processing. The processed cotton is returned to the co-op members and the cotton seeds are then sold to the co-op, which again passes them on to the oil-pressing workshop for making oil. The oil is distributed among the co-op members while the waste, which is used for fertilizer, is divided between the co-op and the village, 80 per cent for the former and 20 per cent for the latter. The Hanchiawa Agricultural Co-op believes that this form of management is correct for their particular conditions.

The production plan of enterprises run by the individual villages or production brigades must be submitted to the co-op authorities for co-ordination and approval. This ensures co-operation between the various small industrial units, which may support each other. What is more important is that in this way the organization and distribution of the labour force in both industry and agriculture can be arranged in a reasonable way under a unified plan so that agricultural production will not be affected.

In the managerial system, the principles carried out are: unified leadership and separate management; production on a large scale during the slack season in farming; production on a smaller scale during the busy agricultural season and no production in the busiest season. This principle is applied in the case of the sugar refinery, for instance. Except for the power plant, where there is a full-time director, all other plants do not have full-time managerial personnel, but are run by the members of the standing committee of the co-op, the head of the section in charge of side-occupations and the chief of the productive unit concerned. All the production chiefs take part in productive labour in the plants. The accounts of these plants are kept by the department of finance and accounting of the co-op. This is in conformity with the principle of running the co-op and industry diligently and frugally. Since the funds are centralized at the co-op, the financial affairs of the various plants are all directly under the supervision of the general Party branch committee and the standing committee of the co-op, thus avoiding certain abuses.

Workers who are not co-op members and the skilled workers who have come from other industrial plants are paid wages previously agreed upon, or wages equivalent to those they received in their own factories. All co-op members working in the co-op's factories have their work-days counted in much the same way as the other co-op members and receive bonuses from the co-op. The only exceptions are the brick kilns where the workers are paid according to piece-work, 14 yuan for every 10,000 bricks. The worker hands the money back to the village authorities and he is credited with work-days accordingly. Members of the sewing groups receive working tickets based on piece-work and are given bonuses according to the value of their working tickets. Those working in other factories of the co-op are credited with their work-days. The amount of work done is added up every quarter and totalled at the end of the year. (They generally receive one to two points more for each work-day than those working in the fields. Highly skilled workers receive three to four points more for each work-day.) Those who have distinguished themselves in work are also given proper rewards in material form or otherwise.

Medical services are available to them at the same rate as the other co-op members. Consultation fees, injections and drugs are paid for at half rate, based on the table of medical fees provided by the Hopei provincial authorities.

Simple rules of work and safety measures were recently drawn up for the power plant. It is hoped that this will help strengthen the management and increase plant safety. The future plan is to further strengthen industrial management by appointing four people as directors. There will be one director for the power plant (it is planned to give this post to an experienced electrician, a Party member); another for the building materials factory, who will also give co-ordinated leadership to the various small units in charge of building materials; a third for the tool repair factory, who will be in charge of the repair, assembly and manufacture of farm tools, water-lifting devices, etc., and the fourth director will be in charge of the integrated plant for processing farm produce and will also give leadership to all the smaller industrial units such as flour mills, rice hulling plants, the sugar refinery, vermicelli factories and oil-pressing workshops. It is planned that the four directors will become members of the general Party branch committee, so as to strengthen the Party leadership in industrial work. Later, on the basis of these four industrial plants, a complex will be set up for unified management over all the industries of the co-op.

On the question of production potential, two examples will illustrate how this arrangement can increase production. The sugar refinery has been assigned the task of making castor sugar. Some difficulties in achieving this goal are foreseen, but once the refinery succeeds in this task it will be a contribution to the state, so they will make every effort to fulfil this task. Under the present conditions the power plant has a potential capacity sufficient to supply other co-ops with part of its power. Work is under way now to realize this potential.

Early in 1954, when the Hanchiawa Agricultural Co-op became a co-op of the advanced type, the general Party branch committee had already carried out the Party's principle of developing a multifarious economy. At that time the existing brick kilns, vermicelli factories and sugar refinery were considered as side-occupations by the Party organization and in its division of labour they were not regarded as industries. In April 1958 a meeting to draw up plans for the leap forward in local industries was held in the county seat. Having listened to the report by the secretary of the county Party committee on the development of local industry, the co-op leaders began to think about the simultaneous development of industry and agriculture. They understood that the development of industries run by the co-op must be combined with the economy of the co-op and such industries must serve production and the daily needs of the co-op members. Specific instructions were also given by Comrades Ma Kuo-jui and Chang Cheng-hsien, secretaries of the provincial Party committee when they came to the co-op to inspect the work. Under the guidance and encouragement of the Party committees at the upper levels, they became more determined to enthusiastically engage in industrial construction. The general Party branch committee divided its leadership in two sections, leadership over agriculture and over industry. Industrial construction became an important topic discussed at the regular meetings of the committee members. While discussing agricultural production, they also heard reports on industrial production. In actual fact, because of the needs of production, industry and agriculture had already been combined into one. Development of industry means further development of agriculture; they cannot be separated from each other. This was gradually realized by all the members of the general Party branch committee. The division of routine work in the committee is as follows: Both the secretary of the general Party branch committee and the deputy secretary, who is concurrently the director of the co-op, not only attend to the key problems in agriculture but also pay attention to industry from time to time. Another two members of the general Party branch committee and three members of the standing committee of the co-op are responsible for industrial production. According to the decision and directive of the Party organization, besides being responsible for the work of the co-op in all fields, the director personally went to Paoting, Tientsin and Peking to apply for the purchase of electrical engineering equipment. When the machines were delivered, they were put outdoors because no other place was available. The Party secretary and all leading cadres took turns guarding the machines. This shows how they treasure the machines.

MAN IS HIS OWN GOD

With the rapid development of the productive forces, as a result of mechanized farming and the electrification of irrigation, there have been tremendous changes in people's minds as well. Granny Liang, on the right side of 70, used to believe in spirits and gods, making an idol of a certain "god" supposedly in charge of "thunder and rain." When the power plant went into operation, she was so happy that she composed a song:

Something strange and really wonderful!
Water gushes from the well when you switch it on.
Wheat crops smile as they are being watered.
The donkey is offended and brays all the time.

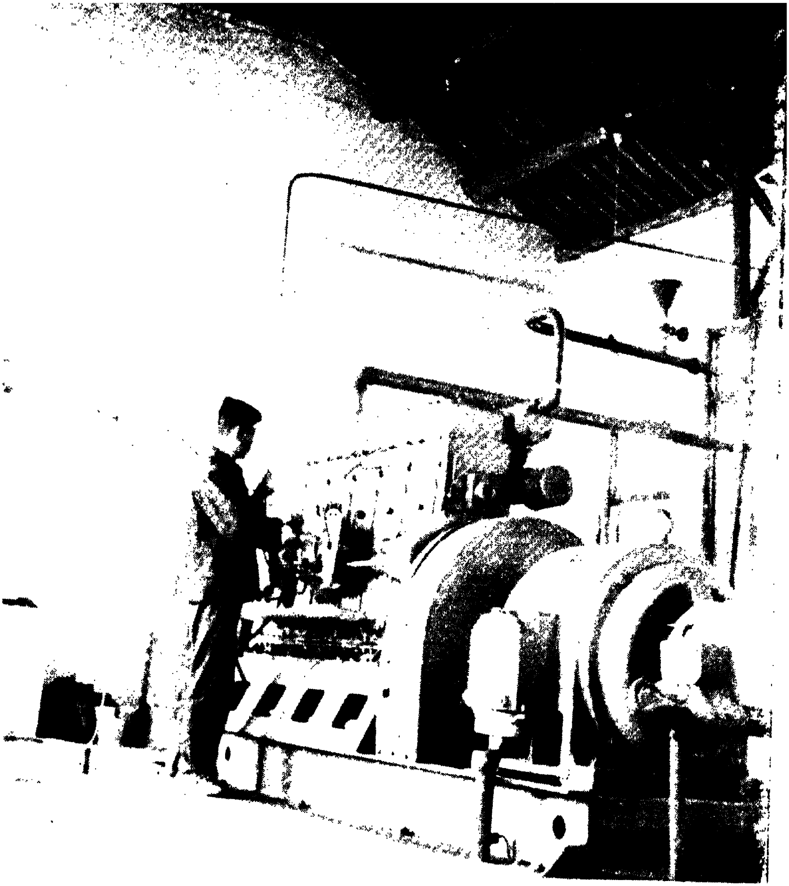
She said, "Man really can conquer nature and is his own god." Returning home, she immediately threw away the incense burner and the picture of the god whom she had been worshipping for the last few decades.

Some people called Hanchiawa the "industrial base" of the region when they saw electric wires hanging overhead and broad highways jutting out in all directions. As a result of the support given to agricultural production by industry, ten happy changes appeared in the Hanchiawa Co-op in 1958: 1. Completion of the power plant with water gushing out from the wells. 2. Rich wheat crops. 3. Fast, deep ploughing by tractors. 4. Land for cultivating potatoes was dug eight inches to one foot in depth. 5. The number of big, fat pigs more than doubled (from 1,100 to 2,400). 6. Plenty of manure and a bumper harvest equal to the yield south of the Yellow River and the Yangtse. 7. Shoots of sweet potatoes well cultivated. 8. Excellent sanitation work. 9. Elimination of illiteracy, learning techniques and everybody aiming to become socialist-minded and expert. 10. Loudspeakers and telephones installed in every village.

Members of the Hanchiawa Co-op visualize a happier future as they sing:

Hanchiawa is a wonderful place,
The land is so fertile.
Watering land by electric power,

An external view of the small thermo-power plant run by the Hanchiawa Co-op



The 84-kilowatt generator in the Hanchiawa Co-op's small thermo-power plant

Makes the granary full of grains and groundnuts.
Hanchiawa is a wonderful place
Where the land is white with cotton bolls.
Everybody is happy.
Life gets better every year.
Hanchiawa is a wonderful place
Where co-op members and cadres live and work
together.
Democracy means everybody has his say
As we press ahead consistently,
Exerting our efforts to the utmost.

Under the wise leadership of the Chinese Communist Party and Chairman Mao Tse-tung, the miserable days of hunger and cold are gone for ever. But the Hanchiawa Co-op does not rest content with what it has achieved. Everybody is ready to study hard, work hard, make big changes and leap forward, think and act boldly, dare to invent and strive for the complete realization of mechanized farming and electrification in the countryside.

NANCHUNG REGION'S GOOD EFFORT

Ko Jun-sheng, Wei Kuang-ping, Tsao Ting-ming

Under the guidance of the general line for socialist construction, local industry in the Nanchung Special Administrative Region of Szechuan Province developed with the speed and intensity of a tornado. In only two months, more than 43,000 factories were built. Among them were some 13,000 fertilizer plants, 4,600 farm tool repair and assembly plants, 24,600 plants for processing farm products and by-products, 684 small-sized hydro-power stations, 800 lime kilns and other factories. Closely dotting the countryside, like stars in the sky, they reflect the first upsurge of local industrial development in the Nanchung region.

In order to make better use of these small factories, and to gradually mechanize agriculture, handicrafts, communications and transport, the Communist Party committee of the Nanchung region issued a directive in June 1958, for the building up of the steel, iron, coal, machine-building and cement industries, medium-sized power stations and chemical fertilizer plants, which will form the core of local industry. The masses immediately turned this directive into action, and the second upsurge of local industrial development was started. In a matter of a few days 17 machine-building factories were set up in the region. In the city of Nanchung alone, four chemical fertilizer plants were built in a single day. Production began immediately, often before construction of the factory was completed. Thus little time was lost, and by July 1958 the chemical fertilizer plants in the region had produced 121 kinds of fertilizer with a total output of 1,500 tons. Machinery such as blowers, internal combustion engines and others, which had not previously been made in the region, will soon be in mass production. A blast furnace with an annual output of 100,000 tons of iron is being built where iron had never been locally produced before. It is expected that 15,000-20,000 tons of iron will be produced by the end of 1958. Cement was formerly bought from other places, but now one plant is already built and 12 others should be completed by the end of August 1958 and the daily output will reach 118 tons. As for coal, production figures this year will soar to 800,000 tons from last year's total of 60,000 tons.

Building local industry on a large scale is a new experience for the people in Nanchung and the results achieved so far can only be considered a beginning. Nevertheless, Nanchung has drawn the following conclusions from its experiences to date:

(1) Local industry should be built according to the needs of agricultural production and agricultural capital construction, thereby closely serving agriculture. The leap forward in agriculture, in the winter of 1957, made it imperative that there should be a corresponding leap forward in industry and as a result, local industry in the Nanchung region grew and flourished. On the other hand, the growth of local industry aids and promotes the growth of agricultural production. There are already many preliminary manifestations of this process. For

instance, the farm implements factories of the region have already produced over 1.57 million tools for the co-ops. The 300 farm implements factories in Hsichung County have produced more than 20,000 wagons of various types in a short period, and now wagons have replaced the old way of carrying things on one's back in most of the county, and efficiency has been raised at least threefold. The peasants in Nanpu County made 20,000 pieces of a new device for digging furrows in sweet potato fields which increases working efficiency 16 times and shortens the time for planting potato cuttings by ten days. Animal fodder processing factories, set up in the region, have produced 150,000 tons of feed, ensuring a plentiful supply for the pigs, which have increased from three million head at the end of 1957 to four million head in 1958. Likewise, the artificial fibres factories have turned a large number of useless things into valuable products, thereby increasing the incomes of the co-ops and their members. In addition, electricity has been brought to 199 farm co-ops with 17,616 member households.

The people are naturally very enthusiastic and this is what they say: "The Communist Party and Chairman Mao have excellent ideas. With their leadership we are building factories everywhere. Chemical fertilizer factories will help us get as much as 1,000 catties of grain for each *mou*. The farm implements factories give our old tools a new look. Fodder processing factories help increase the number of pigs we raise, and artificial fibres factories make new clothes for us all. Iron and coal-mining help build up large-scale industry. The machine-building factories produce 'iron bulls' for our farms, and power stations turn night into day. To set up factories in every township and co-op really is a wonderful idea of Chairman Mao's. Everyone should do his best to achieve more, faster, better and more economical results. We'll be leaving Britain far behind in much less than 15 years." And others say: "A shoulder-pole is long; with its two basket-loads it races the sun. In one basket is industrialization; in the other are a thousand catties of grain. Industry and agriculture are like a pair of legs, advancing with giant strides. Socialism will soon be realized and a happy life is before us." These folk sayings not only show how local industry is changing the face of the countryside, but also the joy and confidence of the masses in building local industry.

(2) Local industry should be set up mainly on the basis of small-sized factories. At the same time, according to need and feasibility, some industry must be built in the special administrative regions and counties to form the base for local industry. The advantages of small-sized factories are as follows: they require a small investment which is easy to acquire from idle funds; their equipment is simple, making it possible to use what is locally available; they are near the necessary sources of raw materials and the market for their finished products, reducing both production and distribution costs and linking supply, production and sales; they are near the farm co-ops, ensuring a regular supply of manpower, which can be adjusted to their needs and the slack seasons of farming; they are built quickly and the results are immediate. Because of all these good points, the small-sized factories are welcomed by the masses and they are being set up in large numbers.

However, if attention is concentrated only on building small-sized factories without actively developing some industry in the special administrative regions and counties as the base for local industry, then the potential of these small factories is not utilized in a more, faster, better and more economical way, and mechanization of agriculture, handicrafts and communications and transport is not fully realized. For instance, iron and steel are needed in the manufacture of many farm implements and other tools, therefore, their production depends on the development of the iron and steel industry. Power-generators and leather belt conveyors are needed to equip the power stations, which necessitates the building of factories for electrical equipment and leather processing. Coal is an essential fuel for many factories, and this requires a coal industry. More machinery is needed in many factories making farm implements and other tools, creating the demand for a machine-building industry. Take another example. The wagons, water-wheels, threshers and cotton-ginning machines of the region urgently need 600,000 sets of ball-bearings. Using manual labour, it would take 2,000 iron workers eight years to produce them, but with 20 punching machines they can be produced in two months. It is easy to see, therefore, that it is essential to build some industry in the special administrative regions and counties on a relatively large scale and with advanced techniques, in accordance with local conditions, in order to form the basis for the widespread development of small-scale industry, which, in turn, would be in a better position to serve agriculture.

(3) The policy of relying on the masses and letting the masses themselves build industry must be followed. This creates the conditions for the peasants to participate in the building of industry and makes it possible

for them to serve industry as well as agriculture. At the same time, the enthusiasm of city and town dwellers to join in the building of industry is aroused. Financial and trading organizations can also build industry on a big scale, in close connection with their work, serving both industry and trade. For instance, the supply and marketing co-ops of the region built 1,149 factories in three months. Schools and health departments built plants for the manufacture of chemical fertilizer and drugs, in line with their studies and work. Even many of the Young Pioneers have voluntarily spent their free time gathering raw materials for artificial fibres in order to aid the factories. In this way the problems of capital investment, technical forces, surveying of resources and equipment, which usually arise when building factories, have all been easily solved. The reason that Nanchung region has been able to build so many factories without asking the state for any additional personnel, without asking it to help build any workshops, and without asking for funds, is precisely to be found here.

Of course, a certain amount of equipment and technical help is indispensable in building such large-scale industries as coal, iron, machine-building, oil, chemical fertilizer and cement. The point is that one shouldn't depend on the state for everything. For a time in the past, the various counties sent quite a number of agents out to Chengtu and Chungking to buy machine tools, but because supplies were insufficient to meet the demand most of them had to go back empty-handed. Some of the counties asked the special administrative region for foundry workers to help them manufacture some new products. The region authorities told them to seek for them among the masses. As a result, more than 2,000 skilled workers of various types were soon found in the region. Nanchung City had a better industrial foundation than most places in the area, but they also could not get all the equipment they needed for building industry on a scale larger than that of the counties. They tackled this problem by gathering all the scattered machinery and setting up six machine-building factories. Thus, relying on their own resources, they were able to gather all the available equipment and most effectively stimulate the initiative of the workers. At the same time a preliminary foundation was laid for the gradual mechanization of agriculture, handicrafts, communications and transport. Facts have proved that when we really turn to the masses and rely fully on them, when we use our own hands and brains, we can uncover all existing potentialities and bring out the enthusiasm and creativeness of the people to the fullest extent, thus enabling us to solve many difficulties which at first glance seemed insoluble.

In the course of building factories and production operations we put great emphasis on the need for mutual co-ordination and mutual assistance. For instance, the salt mines of Yilung County lacked skilled workers, but help immediately came from Nanpu County where salt is also produced, and the Yilung mines were enabled to start production within a very short time. The No. 1 Iron Works in Nanchung City wanted to turn out tractors, but did not have the necessary technical knowledge, while the Machine-Repairing Workshop in the same city wanted to assemble cars, but was short of some machine parts. The two decided to help each other in true communist spirit. Three other factories joined in and their goals were achieved. Such lofty communist ways should be encouraged and departmentalism opposed. The various units should co-operate closely with each other and help each other with what is lacking, so that all can advance hand in hand.

(4) Ideological and educational work should be carried out on a large scale in order to bring out the greatest enthusiasm of the masses and cadres for building local industry. The most important point here is to help them get rid of superstitions and feelings of inferiority, and encourage them to think, speak and act boldly. The impressive development of local industry in the Nanchung region is a vivid illustration of what can be achieved once superstitions are done away with and people's minds are emancipated. Events have proved that every time a superstition is exposed for what it is, the people take another step in the process of ideological emancipation, and industry leaps forward. Many cadres used to think that building industry is beyond the reach of the special administrative regions and counties, not to speak of the townships and the co-ops. They thought that it could be done only by the central and provincial authorities. When they were proved wrong, their way of thinking changed and they became bolder and more confident and as a result factories were set up everywhere. The townships and co-ops were soon in the full swing of building industry.

When this particular superstition was discredited, another doubt arose. Would the simultaneous development of industry and agriculture make agriculture suffer? It was pointed out that there already was a shortage of manpower in agriculture, and now, if the building of industry were added, there would surely be an even greater shortage of labour. The fact is, however, that in some places, when factories were set up on a large scale, machinery soon took the place of manual labour, so that instead of agriculture suffering, more manpower was released for agriculture and it was greatly aided. These experiences made people realize that "walking on both legs is always faster than walking on one."

Then another fear arose among some people. They were country folk and knew little of science and technique, so how could they undertake to build such technically and scientifically difficult industries as chemical fertilizer, machine-building, metallurgy, ore-mining or cement? These were jobs for the experts only, for people with a high level of training. They regarded science and technique as things shrouded in mystery, things beyond their reach. To help them overcome their awe of science and technology, they were taken on visits to many places where this notion has already been proved wrong, showing them on the spot what could be done, organizing exhibitions, and so forth. This radically changed their outlook. These people now feel that science and technology are not so hard to understand, not so difficult to grasp, after all. Once people's minds are liberated, miraculous results are achieved by using native methods and simple equipment. They are now able to refine petroleum, produce iron and steel, manufacture manganese steel products, assemble tractors and motorcars, produce insecticides, etc. Some people used to think that ball-bearings could only be made abroad, but now they are being made in Nanchung region. Some people thought it contrary to all principles of science to expect a generator installed on a ship to generate electricity from water power, but now over 80 households in the region are already using electricity so generated. People used to think that extracting nitrogen from air is one of the most difficult scientific processes, but experiments in Nanchung have already succeeded. They have also been able to extract the valuable medical substance, cholesterol, from pigs' brains. The region originally planned to produce 150,000 tons of chemical fertilizer in five years, but it is now apparent that this will be accomplished in 1958. Countless facts such as these have proved once and for all that the people are the deciding factor in building socialism and once superstitions are gotten rid of and minds are emancipated the wisdom and strength of the masses knows no bounds.

(5) The basic guarantee of successfully building local industry is the personal guidance of the Party secretaries and the participation of all the Party members. Past experiences have conclusively shown that the successful fulfilment of any important political or economic task can be achieved only under the personal guidance of the Party secretaries and the direct participation of every Party member. This truth has once again been proved in the course of building local industry. Only when the Party secretaries personally lead the building of industry and mobilize the entire Party can the masses break through all superstitions and build industry everywhere. The industrial planning conference and the Party congress called by the Szechuan provincial Party committee helped the regional and county Party committees to fully understand the policy of building industry by the entire Party and the entire people, and emphasized that they must personally participate in the development of agri-

culture and industry, aiding every township and every co-op to build its own industry. That is why the common characteristics in the building of industry at all levels and in all places, that have so far appeared, are unity of action and thought, strong leadership, rapid tempo of construction, good ideological work and the rapid development of the movement. In Nanchung County, because the First Secretary of the Party committee gave his direct guidance, called an industrial conference of over 3,000 people, and personally went to the countryside to direct the construction of factories, 6,700 factories were formed in a short time.

ACHENG COUNTY PRODUCES IRON AND STEEL

Kuan Shih-ching

Acheng County, Heilungkiang Province, is rich in more than twenty kinds of valuable minerals — gold, silver, copper and iron. In the past, because the leadership had not helped the people get rid of their awe of technology, these resources were not fully exploited. Only after the second session of the Eighth National Congress of the Chinese Communist Party promulgated the general line for socialist construction, and only when the Party called for the whole country to take part in building industry and greatly expand iron, steel and petroleum production, did we begin to think straight on this problem.

In the latter part of May 1958, at the urging of the provincial Party committee and the provincial people's council, our county Party committee held a meeting and decided to set up a great many industrial enterprises, the start of which was to be a "Vanguard" iron furnace with an eight-cubic-metre capacity. Mass meetings were held immediately throughout the county, urging everyone to help. Teams were organized to go up into the mountains and start construction. We made our plans, familiarized ourselves with the blue-prints, prepared our materials, did the building and made machine parts — all at the same time.

After 35 days of hard struggle, on the 24th of June, we produced our first heat of iron. We had proved once again that Chairman Mao Tse-tung's advice to "slight your difficulties, take careful measures," and the wise policy of relying on the masses and thinking and acting boldly, are absolutely correct. In the course of building the furnace, we learned the following things:

First of all, our "Vanguard" furnace was, in a sense, the product of the firm execution of the general line for socialist construction and the product of the struggle between the two roads — forward to socialism, or back to capitalism.

Could Acheng make iron? Two points of view were advanced in the argument. One held that we had never made iron in Acheng before, that it was beyond the ability of ordinary people, and we had no technicians nor experience in this line. In other words, that the process was something mysterious and far from our grasp.

The other view held that all accomplishments are made by the people, that in learning anything you always start out with no experience. Acheng has iron ore, and the Party and the people have plenty of drive — of course we can make iron. They are doing it in Hopei Province, why can't we?

There was disagreement also as to the size of our project and how fast it could be completed. Some said you first had to draw plans, collect materials, and do other preparations, that constructing the furnace would take from 60 to 80 days even though you would do your best at it. As to size, they said that if Acheng County could produce a few thousand tons a year, we'd be doing fine.

And so, at first, we planned to build only three furnaces, each with an eight-cubic-metre capacity. No one dared even dream of the possibility of reaching an annual production of hundreds of thousands of tons. Many felt we couldn't succeed, that iron and steel making was a job for scientists alone.

But our "Vanguard" was built by ordinary people. The furnace operation is handled only by two stokers. We don't have any experts. The people who built the furnace had never made iron; few of them had ever even seen it made. Encouraged by the general line for socialist construction, they finally won out because they dared to think and act boldly. That's the way it is: if you fully arouse the people, and rely upon them, combining "native" and modern methods, uniting the leaders and the people, no difficulty can prevent you from advancing.

Secondly, our "Vanguard" was the product of full co-operation. After everyone was made to see the project in its true light, the biggest problem was how to go ahead with the construction. Where were the materials to come from? At the time we didn't have a single firebrick or bag of cement. We held meetings to discuss how to support the project right after the county Party committee had made the decision, and when everyone's thinking was straight on the problem, we spread out our plans on the table. Every unit taking part stated what it could contribute in the way of material, technique and labour power. This disproved the thesis of those who had claimed we couldn't solve the problems of raw materials, processing equipment, transport vehicles and construction materials.

A winery offered a smoke-stack it wasn't using. The Grain Bureau gave us a big oil drum to serve as a dust absorber. The workers of the machinery plant, the sugar mill and the handicraft federation worked day and night making parts. Twenty-odd members of the transport co-op were on the go for four days solid, without any sleep. They said, "Building the furnace will make us overtake Britain's steel production that much sooner. We don't mind putting in a little extra work."

We also got plenty of support from outside the county. The Sungchiang Motor Factory heard that we had been looking all over for a blower, without success. They generously gave us one, with a motor and all the equipment, that they had been intending to use themselves. To learn technique, we sent people to Hopei to study their experience with home-made iron furnaces; the Hsinchiang plant and our provincial iron department also sent technicians to help us.

Thirdly, our "Vanguard" furnace was also the product of the collective labour and wisdom of our people.

Iron-making needs large quantities of ore. Where was it to come from? Should we wait until the ore was prospected before building the furnace? That would cause delay. The only thing to do was to organize the whole mountain population to find the ore, dig it out, and smelt it by simple methods, to combine scientific prospecting with the full efforts of the people, to turn our geological and metallurgical work into a mass movement.

We organized a geological training class, showed the people ore samples and taught them how to recognize them and how to do different kinds of prospecting. Whenever they found signs of ore, they reported to the township or county authorities; at the same time, the local people immediately dug the ore and smelted it in their home-made furnaces. Ore from mines worked by the people was also smelted by township, county and national iron mills.

Using these methods, the people discovered over twenty different iron fields in thirty some-odd days. Sixty-year-old Grandpa Chang, from Hsiaoling Township, reported a mine he had found during the Japanese occupation, but whose existence he had concealed from the enemy. He also helped us with the prospecting.

In a word, in spite of the present shortage of trained geologists, we find that by relying on the intelligence and enthusiasm of the people, and organizing them to do the prospecting and the smelting, we are able to open up formerly barren mountain regions.

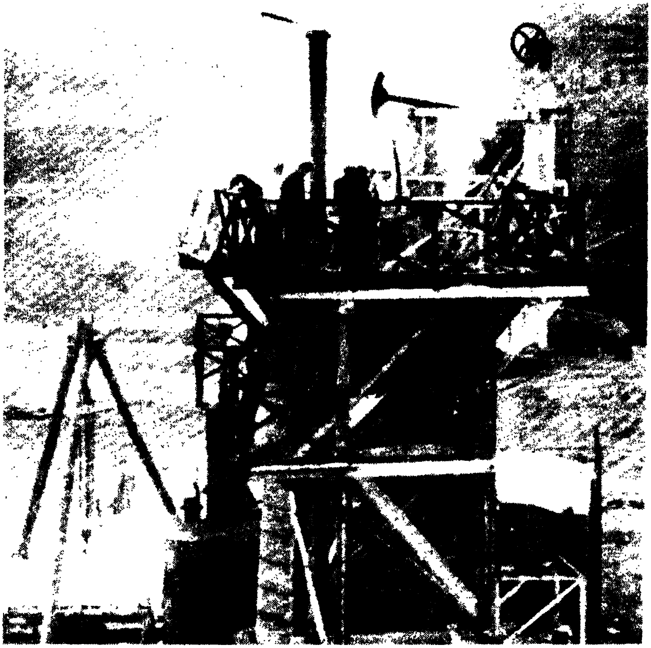
Because we were planning and going ahead with the work at the same time, our metal casting couldn't keep up with construction. Our technicians therefore built our furnace base of cement instead of cast iron. By bringing the inventiveness of the people into play, breaking away from orthodox methods and striking out boldly, we built our first furnace quickly. It became the "mother" of the other furnaces then under construction in our county, and trained many future furnace-builders.

On the basis of the successful completion of our first "Vanguard," we decided to construct 12 to 15 more furnaces with capacities of eight to 13 cubic metres before August first, and another twelve to fifteen 13-cubic-metre capacity furnaces before October first. With 25 to 30 furnaces completed by the end of the year, the county will have an annual iron production of over 25,000 tons. In addition, using home-made furnaces, we will also produce 5,000 tons of steel.

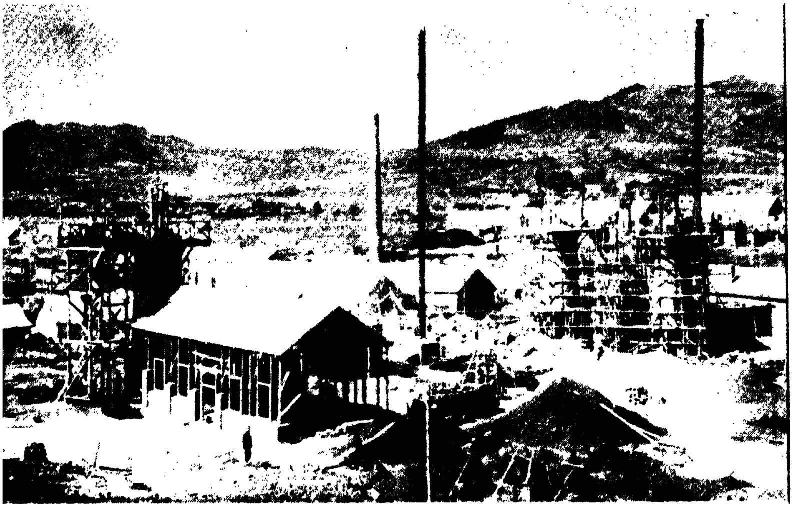
In 1959, we will build five to ten more furnaces with a capacity of 50 to 100 cubic metres each. This will bring our annual iron production to over 300,000 tons; we will also build an iron and steel complex with an annual capacity of 110,000 to 150,000 tons of steel.

Besides making iron and steel, we plan to construct, in 1958, two lead-zinc furnaces, five sulphur furnaces, five copper furnaces and a graphite-smelting plant, all to go into production before the end of the year, with a total annual output of as many as 2,000 tons each.

To carry out this imposing plan, we must strengthen Party leadership, rely on the wisdom of the masses, and co-operate closely with neighbouring counties. Guided by the Party's general line for socialist construction, let the whole county raise high the red flag, dispel the aura of mystery enveloping prospecting and metal-smelting, and drive full speed ahead to a big leap in iron and steel production.



The "Vanguard" furnace built by the peasants in Acheng



More and more small furnaces are being built in Acheng

THE STRENGTH OF THE MASSES IS LIMITLESS

Yin Tse-ming

Iron smelting and steel making in the Shaoyang Special Administrative Region, Hunan Province, are rapidly developing on a mass scale. In a short period in the autumn of 1958, 12,378 local blast furnaces were built in this area. Of these, 4,816 went into immediate operation, with a daily output of more than 2,400 tons. The highest daily output has reached the 2,438 ton mark, which is an average of half a ton a day for each local furnace in operation. In the first ten days of September 1958, daily output of iron more than trebled (the daily output on September 1 was 595 tons). Now this region has already produced 50,000 tons of iron. Not only is there a "bumper harvest" in many places but the Chinhua Iron Works in Shaotung County, "king" of local blast furnaces, has produced the remarkable record of almost three tons (5,836 catties) a day.

At present, people in many districts are working with increasing enthusiasm to produce iron and steel, and as more and more effective measures are taken, it is anticipated that there will be even greater achievement in steel and iron production in the near future.

The main reason for this remarkable progress in iron and steel production in such a short time in Shaoyang region is the fact that this region has fully carried out the Communist Party's directive to let the whole Party and all the people work in iron and steel production, in keeping with the Party's general line of socialist construction.

Iron and steel production is not simply a technical job; it is also a political task that has an important bearing on all other activities. Therefore, the first condition for the rapid development of production is for the Party secretaries to take the lead and have the entire Party membership mobilized. The Party committees of Shaoyang region are all clearly convinced of the importance of the guiding principle of making steel production the first task, in order to hasten the progress of industry and agriculture and they gave iron and steel production priority. The first secretaries of different Party committees all took personal charge, leading more than 10,000 government functionaries and nearly one million workers in this battle for iron and steel. Many government functionaries organized experimental units in the factories and workshops and they all took part in actual production. By joining the movement first the leaders not only set an example for the masses and hastened its progress, but they also learned much and became experienced workers. By the beginning of September 1958, government functionaries in this region had set up a total of 2,352 experimental blast furnaces and 500 experimental coal pits. In Lienyuan County 15 members of the county Party committee and 29 township Party secretaries have already mastered the technique of smelting iron.

In Lunghui County, deputy secretary of the county Party committee, Hsieh Kuo, set up experimental furnaces at Shihmen, but failed to produce iron in 22 successive attempts. He persisted, studying and trying again and again and finally he produced iron in all the five local furnaces. In Shaotung County, the head of Niumasze Township, Chao Lin-fu, stayed by the furnace, sleeping and eating on the spot. After 21 experiments he finally increased the daily output of each furnace from 300 to 2,250 catties. Leaders of co-ops, peasants, men and women of all ages, workers, government officials and soldiers are all trying their skill with experimental furnaces. Many peasants want to be capable of running agricultural co-ops and factories, capable of farming as well as smelting iron.

When they first began to work in iron and steel production many people wanted to have big, "foreign" blast furnaces. They were not interested in these small, native furnaces. They thought it necessary to wait for elaborate equipment. Actually that line of thinking would result in producing less, slower, more expensively and not so well, and it would not lead to production on a mass basis. Under the timely guidance of the Central Committee and the provincial committee of the Communist Party, that policy was firmly rejected and the policy of putting iron and steel production on a mass basis, of mobilizing all the Party members and letting politics take the lead was carried out. From the beginning, Shaoyang region initiated a gigantic propaganda campaign. All the people were encouraged to voice their opinions in a general debate on such subjects as: why iron and steel production must be developed, how it can be done, and the relationship between the production of iron and steel and agriculture. Through voicing different opinions and public debates the masses achieved a clearer understanding, became convinced and their enthusiasm was aroused. Within a few days more than half a million written pledges were sent to the Party in support of the campaign. The people felt elated and stimulated; millions of hearts had only one wish — to fight hard to achieve and surpass the goal of producing 300,000 tons of iron in 1958.

The strength of the masses is tremendous. All the problems of funds, raw materials, equipment, fuel and geological survey of resources, which seemed hard to solve in the past, disappeared before the resourcefulness of the people. In honour of the anniversary of the Communist Party (July 1), 67,000 people in Hsinhua County worked for three days and nights on end and built 1,025 blast furnaces. Many people hearing the news came from as far as 100 *li* away to join in the work, carrying timber and bamboo and their food and clothes. In Szetu Township 53 couples came to put their names down offering to help in industrial production. Within a few days this county collected a fund of more than 1.6 million yuan. There was a fifty-year-old woman who voluntarily contributed more than 200 yuan, her savings of many years, for the local industry. The people contributed 1,280 pigs, more than 700,000 catties of vegetables and 180,000 pairs of straw sandals for the people who were taking part in this industrial construction project. To solve the housing problem, the people of Tienping Township, in one morning, spontaneously vacated more than 500 rooms. The contributions from the masses became a mighty torrent, and the blast furnaces were set up very quickly. The people composed a song describing this event:

The Communist Party is really wonderful.
In three days more than a thousand furnaces were built.

The masses' strength is really tremendous.
The American imperialists will run off, tails between legs.
The Chinese people will now surpass Britain.
The East wind will always prevail over the West wind.

Since the supply of resources was uncertain, the people went to the hills to look for mines. In Hsianghsiang County nearly 80,000 people went prospecting and digging coal. Some made discouraging remarks, saying that such effort was in vain, "like a dog trying to catch rats," but they were answered: "Even if we have to dig through the earth, we shall find coal." As a result of this mass movement, many big iron and coal mines were discovered. Hsinhua County alone discovered 14 big iron mines of more than five million tons each and eight big coal mines of more than four million tons each. Tungshang County, which was thought to be lacking in coal and iron, was found to be extremely rich in these resources.

There were very few technicians in this region, but the rapid growth of blast furnaces made the shortage of trained workers even more acute. The usual methods of training apprentices would have taken three years. Should production be stopped for three years or should these methods be given up and the wisdom of the masses developed to the full in order to solve this problem quickly? Shaoyang region's answer was to apply the mass line. First the interest and enthusiasm of the masses were aroused and then a movement was launched for people to volunteer to become experts. Many young peasants came forward, and some of them vowed to study well and practise hard so that they would learn the entire technique of iron smelting in five days, and within ten days train another ten apprentices each. During study the old workers were helped with their ideology, so that they will be willing to teach all they know and not withhold any professional secrets. At the same time experienced workshops were encouraged to help the new workshops, old hands to help newcomers, one teaching ten, ten teaching a hundred. Then the method of "people changing trades" was adopted. The skills of the welder, the coppersmith and the blacksmith are somewhat similar to that of the iron and steel workers, so apart from a few craftsmen who remained in the villages to serve the needs of the people, all who could be spared were urged to help in smelting iron and making steel. On-the-spot meetings were held to exchange experiences and classes were organized to train large numbers of technicians. In this way the number of iron and steel workers grew like rolling snowballs. Within a few months they grew from about 300 to 26,743. A team of "steel doctors" was also organized, mainly using experienced iron and steel workers, to go around inspecting, solving difficult problems and teaching technique. To solve problems of a general nature meetings were organized of both old and new technicians, enabling them to study the problems together and exchange views. These methods were used in every district and thus the problem of producing iron was basically solved.

In order to increase production and make all the furnaces produce more, many of the working techniques were improved and the furnaces were renovated. In Shaotung County, after many local furnaces started to produce iron, they carried out "five changes" (increase the size of the furnaces, making them bigger and higher; change the way the molten iron was poured by the use of taps; replace single blowers with double blowers which were later changed again to motorized blowers; convert single-layer furnaces into double-layer furnaces; use cheaper charcoal). As a result the daily output of the local furnaces leaped from 800 to 3,000 catties. In Hsinhua County all gas, Diesel and petrol engines and water-pumps not in use were converted into furnace blowers. Where there was water hydraulic blowers were used; where no water power was available animal power was used. In this way human labour was saved and production increased. In Lienyuan County the Anping Iron Works improved the blowers and converted cold air into hot air, enabling the local furnaces to produce better quality iron. These examples show that once the masses have rid themselves of superstitions and their thoughts are fully liberated, they can be highly inventive and creative.

As production expanded, the supply of fuel presented a serious problem, causing many furnaces to carry on from hand to mouth. To cope with this situation, the various Party committees took steps to immediately put due emphasis on fuel supply. The coal miners co-operated fully, working the mines in three shifts round the clock, improving their technique and adopting all measures that were necessary to increase production. At the same time the people were mobilized to open small coal mines. Recently 500 such small coal mines were started in Shaoyang, with a daily increase in output of 9,000 tons. Apart from increasing the coal production, there was much coke produced by native methods. In only one month kilns for producing coke by native methods increased from 495 to 700, with a daily output that rose from 4,000 tons to 5,600 tons. A coke kiln in Shaotung County has produced coke with the highest extraction rate — 85 per cent, which is higher than the record of the famous state-owned Niumasze Coal Mine in the province. By these methods of mobilizing the strength of the masses and relying on them, the problem of insufficient fuel was solved.

In the drive to economize on fuel, all sorts of local substitutes were successfully used, thereby debunking the myth that only coke and charcoal can be used to smelt iron. Workers of the Chinchikeng Iron Works in Lienyuan County invented the method of using coal dust to smelt iron; in Wukang County they used hard coal to smelt iron and the output was high. Other places used a mixture of hard coal and inferior charcoal or a small amount of coke and charcoal to smelt iron, with very good results. New possibilities were opened for increased production of coal and iron.

There is usually much rain in the southern part of China and it often interfered with mining and transport. A steady supply of coal and iron ore had to be guaranteed, with a certain amount for reserve. Extra native furnaces had to be built to allow for repairs and longer serviceability of the furnaces. Spare blowers and puddlers were needed to keep production at a certain level and ensure the daily output required. The whole region pitched in to solve these problems. By the beginning of September 1958 Lienyuan County had built 600 extra furnaces. In ten days Shaotung County got more than 40,000 tons of coal, 700 tons of charcoal and 2,800 tons of coke, enough "food" for 37 days for its 600 local furnaces.

Another problem that became apparent after the local furnaces started production was the uneven distribution of resources, labour and technical forces. Some places have iron but no coal, some have coal but no iron, while other places have natural resources but lack labour. Counties and townships had to forget boundaries and help each other in the spirit of all for one, one for all. This spirit of communist co-operation has already blossomed and borne fruit. The large-scale co-operation in Hsinhua County is a very good example. Among the 52 townships where furnaces were set up, 23 have iron but no coal, four have coal but no iron, one has neither iron nor coal but has adequate labour power and 24 have coal and iron but are short of workers. As a result, many furnaces could not start production. A county-wide debate was held on the subject of communist co-operation and all selfish ideas were thoroughly swept away. The county was divided into 12 areas and the labour force, raw materials and fuel were redistributed in a unified way, thus satisfactorily solving many problems. Hoching Township formerly had to get coal from a source more than 50 *li* away, but now, under the new arrangement, they get coal from the nearby Shashih Township, thereby economizing on labour and ensuring a steady supply of fuel. Huahsi Township formerly had only two experienced workers while Weishan Township had 155 workers whose technical level was low. Neither township could solve its problem, but with the new arrangement, they helped each other and both townships benefited. The bumper harvest in ideology led to a bumper harvest in iron and steel production. Since large-scale co-operation started, the number of furnaces in production in this county increased from 457 to 1,756. Regular daily output rose from 60 tons to more than 890 tons.

The development of iron and steel production is a political task for the entire Party and people. Different departments in the region helped in every way. The machine-building industry made equipment, commercial organizations took care of purchases, transport organizations mobilized 90 per cent of the vehicles and boats to transport iron ore and fuel and health organizations sent doctors and nurses to care for the workers. All these formed a mighty force, helping the rapid development of iron and steel production.

Setting examples of extraordinary output is an effective method of mobilizing the masses, of arousing them to greater efforts. Then the people try to emulate and surpass the advanced workers. In a short time the "king" of local furnaces — the Chinhua Iron Works in Shaotung County — made such a spectacular leap forward that its daily output rose from 2,900 to 3,400 catties. Workers of the neighbouring Chouhsiachiao Iron Works studied their experiences and caught up with them, raising their daily output to 3,885 catties. Now since the Chouhsiachiao Iron Works had been learning from the Chinhua Iron Works, the workers in the latter place were determined not to let the "pupil" surpass the "teacher." They discussed the matter all one night and made many good proposals to improve their working technique. Then, working hard for three days and nights they succeeded in raising their output first to 3,907 catties, then to 5,000 catties, and once again to 5,836 catties. They surpassed the Chouhsiachiao Iron Works and set an example for the whole region. This lively mass competition aroused the spirit of many iron workers and a socialist emulation movement started immediately to "learn from Chinhua, catch up with Chinhua and surpass Chinhua." This movement has spread to competitions in iron smelting, coal mining and raising the level of technique, management, leadership and ideology. In short, there is emulation everywhere, among all workers. and a lively mass movement has developed throughout the entire region for greater achievements in iron and steel production.

PARTY SECRETARIES TAKE THE LEAD[1]

In the middle of June 1958, the people of Laishui County, Hopei Province, inspired by the general line for socialist construction and relying on the firm leadership of the Communist Party and the collective strength of the agricultural co-ops, started a tremendous movement for building industry. By the beginning of September, the county had built a variety of factories and mines, 4,695 in all, including 24 iron works. Among these are four small blast furnaces of 6.5 cubic metres, two of which are now producing iron, and 1,131 local furnaces of all types. The development of the iron and steel industry is changing the appearance of Laishui County, which, in the past, was poverty-stricken and economically backward.

PRODUCING IRON AND STEEL ON OUR OWN

At first we in the county Party committee did not fully realize the importance of industry and did not pay much attention to setting up an iron and steel industry. By the end of 1957 there were only 24 handicraft co-ops in the whole county, but not a single machine-repair shop existed, not even for making parts of double-share ploughs. Such industrial backwardness seriously affected the development of agriculture and did not help socialist construction. After studying the Party's general line for socialist construction, the county Party committee began to pay more attention to the development of local industries, but at first we did not clearly see that the main objective should be iron and steel. We only planned to open certain mines and process foodstuffs. Later, as a result of the directive of the Central Committee of the Communist Party and the conferences for the great leap in industry held by the provincial and regional Party committees, we gradually realized the importance of producing iron and steel. The movement to reform farm tools had already started in the villages and there was a serious shortage of iron and steel. We reckoned that the county would need an annual supply of 30,000 tons of iron and steel, but we did not know where it would come from. The county Party committee became convinced that there was only one solution: to rely on our own strength for the production of iron and steel. The development of the iron and steel industry was immediately acknowledged as our most urgent task. We called upon the people to work hard for six months, to set up 775 local furnaces and 20 blast furnaces and to produce 18,000 tons of iron and steel.

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[1] This article was written by the Laishui County Committee of the Chinese Communist Party.

The county Party committee drafted a plan for developing the iron and steel industry, then set up an administrative organization that would strengthen the leadership of the whole county. Wang Cheng-chun, first secretary of the county Party committee, was put in charge of over-all county affairs. Second secretary Wang Hsiu-ming and deputy secretary Ma Chuan-chung were put in charge of industry. Thirty-five functionaries formed a planning committee for industry, a department of industry and a bureau of industry. Party secretaries, heads of co-ops and some special members were assigned to take charge of industry in the townships and co-ops and 154 additional functionaries and 7,442 workers (9.5 per cent of the local labour power) joined the iron and steel industry. Thus, in a short time work on iron and steel making was under way. In order to guarantee that iron and steel production had priority, Party secretaries other than those assigned to this task went to the furnaces daily to help in any way possible. If they could not find time during the day they would go late at night, return home for a few hours of sleep, then start their normal day's work again. When the furnaces were being built and when production first started, the Party secretaries in charge of industry hardly ever left the work sites. Production was constantly under the direct leadership of the Party committee.

OPENING "EXPERIMENTAL UNITS"

At first the county Party committee was totally inexperienced. They did not even know the difference between a native furnace and a blast furnace. Wang Hsiu-ming was sent by the county Party committee to Shansi and Honan to study their experiences. Others were sent to Wuan, Funing, Tengfeng, Yangcheng and Lushan to learn both native and foreign methods of smelting iron. Upon his return Wang Hsiu-ming organized a group of 18 functionaries to experiment at the

No. 1 Iron Works. He took charge of setting up a blast furnace where he tried to smelt iron by a native method. The first earth-mould type furnace was built in Laishui County and after working for a day and a night the furnace was opened but no iron was there. Finally some bits were found in the dregs, altogether four ounces. Some of the workers felt that this was a total failure, but Wang Hsiu-ming said, "This is not a total failure. We did succeed in getting a little iron, next time we may get more."

After carefully studying the reasons for this failure they started the second experiment. They tried 17 times without success. Their total yield was eight catties. By now they were disheartened. Some said, "We used more than 1,000 catties of coal and 18 of us worked for two days and nights, but we only got eight catties of iron. This is not enough to pay for our drinking water." Wang Hsiu-ming answered, "Eight catties is a great improvement over the first four ounces and we must recognize this as an achievement. If we are willing to learn we shall succeed in the end." The group looked at the eight catties of iron and their enthusiasm returned. Analysing their work, they decided that the main reason for the last two failures was their lack of faith and perseverance. They had been too impatient and as a result the temperature had not been high enough and the iron ore was not properly smelted. To correct this they made a hand-operated blower. They were ready for the third attempt. After the fire was started Wang Hsiu-ming worked the bellows. The flame became stronger and stronger, and the iron ore was properly melted. With renewed enthusiasm they worked all through the night until five o'clock in the morning.

When they opened the furnace the iron was smelted. This time they got 150 catties, achieving an extraction rate of 62 per cent.

The next problem was how to produce steel. Wang Hsiu-ming heard that Wang Teh-li of Wachai Village and Tu Teh-lin of Peiyian Village had some experience in making steel. They were asked to come to the iron works and help the others. After four failures, they succeeded in the fifth attempt in producing medium carbon steel by a native method, which was tested and found to be of quite good quality, suitable for making machine parts.

This iron-producing plant was used as a school for training workers. The county has trained eight groups of technicians, more than 300 people all told. At the same time many different types of native furnaces were invented and now they can be seen all over the county.

RELYING ON THE MASSES AND STUDYING HARD

There were many other difficulties in building an iron and steel industry in Laishui County. Everything had to start from scratch. There was not sufficient technical strength and no equipment. Although a few workers were trained by the methods described and others were sent to study, yet they were all beginners and could not solve all sorts of difficult problems. Then, too, the county lacked the necessary raw materials.

The county Party committee started a discussion among the workers on the possibility of using local people and local methods to set up a modern blast furnace. At the same time a conference was held, calling on all the people to help build the blast furnace.

We made the following slogan: "Like the sputnik and the rocket we shall advance faster than lightning and sound. We shall try to catch up with Hsushui and surpass Yihsien. We shall work hard and overcome all difficulties, fight for 30 days so that we can achieve our goal by the Party's birthday (July 1)." During the construction of the blast furnace the workers asked their teachers to help them read the diagrams and when they did not know how to proceed they discussed the problem and each man contributed his knowledge. When they lacked the proper refractory materials they made the fire-bricks themselves. When they could not get cement the water-conservancy organizations and others lent them cement. When they could not get a pressure-gauge the school teachers brought out their test tubes and mercury and made one for them. They were short of steel plates but they got eight gasoline tanks from the trade bureau to use as substitutes.

These experiences once again prove the value of relying on the masses to solve problems and we have learned many new lessons. At first the county Party committee thought the local technicians were not good enough to make all the equipment such as iron pipes and they sent several men to Yihsien, Tinghsien, Chuohsien and Peking to order them, but they failed to get them. Finally the county Party committee decided to have the pipes made locally. The workers studied the diagrams and accepted the task with confidence. In less than seven days they were finished. This made us realize that we must trust and rely on the masses. In this manner a number of 6.5-cubic-metre blast furnaces were set up one after another.

The next step was to produce steel and maintain regular production. The first blast furnace met with the most difficulties. There were three attempts and three failures, partly because the workers could not master the technique, but the main difficulty was that while the county Party committee was strengthening the political leadership, the technical leadership was lagging behind. So the county Party committee immediately sent for two experienced engineers from Peking and assigned Wang Hsiu-ming as section leader at the furnace. Based on his own experience and the help of the workers and engineers, Wang made up a set of working rules. He made a thorough check of the staff, the tools, the materials and the equipment. When the smelting started for the fourth time, Wang himself took charge of the air pressure, the air temperature and the water temperature, checking up every ten minutes. Certain changes were also made during the smelting process. The amount of materials used was gradually increased from 25 catties of iron ore, 100 catties of coke and 25 catties of limestone to 100 catties of iron ore, 100 catties of coke and 25 catties of limestone, with adjustments to allow for changes in temperature. No one wanted to leave the blast furnace. They all stayed there day and night. Comrade Wang Cheng-chun saw that Wang Hsiu-ming was exhausted after two days and one night without rest and sent him off, while he took charge at the furnace. After working hard for two days and nights they succeeded in achieving regular production and increasing the output. The time needed to produce iron was shortened from two and half hours to one hour and half, with a daily output that began at two tons and was increased to four tons. Such results inspired the workers. They felt they were in a battle, not with guns but with iron and steel. No work was too hard. No personal difficulties stood in the way. When Shao Peng stepped on molten iron by mistake he continued to work, refusing to leave the furnace.

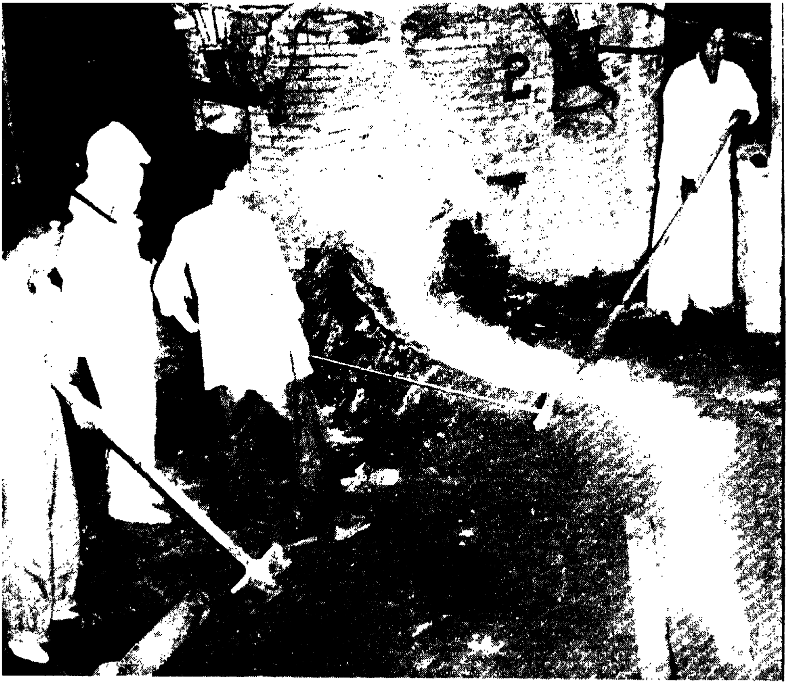
THE BATTLE FOR TIME

With the success of the No. 1 furnace, a second furnace was started. In the evening of August 27 when it was time for the first tapping a heavy rain drenched the belt of the blower causing the temperature in the furnace to suddenly drop. The molten iron began to congeal. At this crucial moment, the first county Party secretary Wang Cheng-chun, the third secretary Liu Kuei-tseng, the deputy secretaries Liu Tien-chia, Chao Keh-shan and Ma Chuan-chung helped the workers fix the blowers and clear the furnace, ignoring the pouring rain. Comrade Wang Hsiu-ming also came to help. However the iron had already solidified into a wall four inches thick, blocking the flow of all further iron. Some of the exhausted workers lost their confidence. The technicians considered it hopeless, and suggested pulling down the furnace and rebuilding it completely. However the Party secretaries were aware that such a job would take at least a fortnight with a loss of 60 tons of iron. Iron and steel are needed so urgently, such a loss must not be allowed. Wang Hsiu-ming picked six workers for the job. He ordered an increase in temperature while he worked with the rabble. Some of the other Party secretaries and the head of the industry department led a team of workers who hammered. After five hours of hard work they finally succeeded in getting the iron out, and the furnace was saved. One engineer said with admiration: "Today your revolutionary enthusiasm taught me a wonderful lesson."

Through these experiences we feel that, in order to strengthen the Party's leadership in iron and steel production, the leading functionaries must work on the spot, sharing the same life and work as the masses. This will arouse mass enthusiasm, while participating in the actual labour will give the leaders experience and technique so that they will be able to understand the problems and know how to solve them quickly. This programme is now widely used throughout the county. For example the first Party secretary of Mangshihkou Township Huang Hsueh-shen took part in smelting iron and studied problems together with the workers. Output per furnace increased from 14 catties to 25 and then to 30 catties. This type of leadership has greatly increased the enthusiasm of the masses. Our output has now overfulfilled our monthly plan. We believe that we can make even more progress in the future.

The conference of the Political Bureau of the Party's Central Committee has declared that this year China will produce 10.7 million tons of steel. This inspires us to even greater efforts. According to the county Party committee's plan, five secretaries headed by the first secretary are to form the headquarters of the steel and iron production, taking charge of four sections: building furnaces and production, organizing labour and transport, supply and mining. Each section will be under the leadership of a Party secretary. Based on the principle that

Wang Hsiu-ming (*second from right*), Second Secretary of the Laishui County Party Committee, examines a furnace



Iron pours out from one of the small furnaces in Laishui industry and agriculture should go hand in hand, we have sent 12 members of the county Party committee, 189 leading functionaries from the county and the townships, and 26,893 workers (30 per cent of the total county labour strength) to work and fight for greater production of iron and steel.

BUILDING SMALL INDUSTRIES WITH LOCAL RESOURCES[1]

During the big leap forward in agriculture the Hsukuang No. 1 Agricultural Co-op of Tushan Township, Ngocheng County, Hupeh Province, built a number of small plants for granular fertilizer, for making and repairing farm tools, for processing agricultural products and a methane power station. These plants can be built quickly and their production figures are impressive. In little more than one month 40,000 catties of granular fertilizer were manufactured, and 421 farm tools were made or repaired. The co-op now has sufficient fertilizer for all its needs, including the rice and cotton fields. The integrated processing plant is capable of grinding flour, in addition to handling many other items.

The small plants have hastened the development of agricultural production, increased the income of the co-op and reduced expenses. A new plough bought in a shop costs 18 yuan. A similar plough manufactured in their own small plant costs the co-op only eight yuan. A cotton sowing machine which they wanted to buy costs 34 yuan but the small plant makes roller-seeders using the three-tooth hoe they have on hand and the cost is only two yuan. The market price for 100 catties of granular fertilizer is 5.60 yuan, but when it is produced by the small, local factory it only costs 1.20 yuan. In this way more than 4,000 yuan were saved by the co-op in little more than one month.

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[1] This article was written by the Ngocheng County Committee of the Chinese Communist Party.

The level of technique in the countryside is growing rapidly in the wake of the small plants. In the last two years the co-op invented and improved only 13 tools and working methods, but after the setting up of these plants 12 new tools were invented within two months. In the past nobody thought of using mechanical power, but now a few men, spending only 12 yuan, motorized a junk.

Hsiao Kung-tse, head of the farm tools plant, says, "Whatever we dream can be achieved." The establishment of small plants has shown the co-op members the wonderful prospects for the future that can materialize through industrialization. Some old people have pointed out that in the past they always talked of industrialization, but nothing happened. Now it is becoming a reality.

The co-op financed the small plants on its own without asking a single cent from the state. They were built by relying on the masses and using simple, native methods.

The co-op was guided by three principles in setting up these plants: 1) Basing itself on the economic strength and resources of the co-op they started with small plants, which can later be expanded. 2) Local industries are planned to serve the needs of agriculture, not just to make money. 3) The types of plants are established in the order of the particular needs of agricultural production in the co-op.

The first problem they met was: where are the funds to come from?

To set up these small plants the co-op needed more than 35,000 yuan. In 1957 the operating fund in the co-op and the common reserve fund came to more than 45,000 yuan, but this would only be sufficient to meet the co-op's 1958 expenses for agricultural production and its subsidiary occupations. The co-op management committee held a special meeting where it was decided to take 2,000 yuan out of the funds, to be paid back after the rape-seed harvest. However this was not enough. Hu Chang-pi, head of the co-op, thinking of the county Party secretary's advice that all difficulties can be solved by relying on the masses, suggested that the committee let the people make contributions. They made the following regulations for the collection of funds: properties contributed must be fairly evaluated and bought according to the fixed prices; all money should be paid back by fixed periods; monthly interest should be paid.

The co-op members were very keen on building small factories and when they heard that there were not enough funds and materials for building the plants, they willingly invested cash and goods. Chou Chi-jung brought along the timber he had kept for three years to make a table when he gets married. He said, "The table would have made only me happy, but the factory will bring happiness to all. I can wait a while for my table." An old man Lu Chui-chih brought out 100 yuan he had saved to build a house. He persuaded others to follow his example, saying, "Our elders used to advise us not to be stingy, but to eat and dress well, lest we die and leave our money for others. Times are different now, but I still think we should not be stingy. If we use our money to build factories our village will be industrialized, our lives will be easier and we might even live longer. Our children will certainly be happier." In this spirit the co-op members contributed more than 5,000 catties of timber and more than 2,000 yuan. The problems of fund and materials were solved.

MAKING THE BEST USE OF AVAILABLE RESOURCES

When they were ready to build the factories some people thought they must be like the big factories in the cities. Others wanted to have all the equipment ready before starting production. The co-op administration felt this was a serious ideological problem, so they called a general membership meeting at which the co-op chairman, Hu Chang-pi, said, "We are starting a factory, but we have limited funds to build the plant and buy machinery. How shall we do it?" The co-op members discussed the problem. Some thought it necessary to have a building first, so that it would look like a factory. Another member said, "That won't do. It is like giving a child a name before it is born. If we start that way who knows how much we shall spend in the end?" A group of old peasants held a quiet conference and then one stood up and said, "We old people have a suggestion, but we do not know whether the young people will like it or not. We would like to suggest that the co-op's recreation building be used for the factory for the time being. After we have completed our production plan, we shall build another, bigger recreation building where we shall have films as well as operas." All the co-op members welcomed this suggestion and it was accepted. Another, smaller house was given to the members for a reading-room and recreation centre. Everything was done in the simplest way possible. An unused ramshackle thatched-roof house was plastered over with mud, so that it would provide shelter against the wind and rain, and this became the granular fertilizer plant.

The equipment and tools were almost all contributed by the members. The processing factory needed a stone mill, so one peasant, Liang Hai-ching, brought his own from his house. Another peasant, Chen Yu-chang, also contributed one. The members brought along many small tools such as axes and saws which the factory needed and sold them to the co-op. Some pieces of equipment were borrowed and substitutes were found for others. The fertilizer plant needed a cement floor but that would cost too much, so they used mats instead. A tin tray was needed for the soldering tools, but a pottery one was used as a substitute. Whenever possible they manufactured the instruments which they needed, making such things as stirring rods for mixing the fertilizer, funnels and shelves. They bought only those things which they could not make like iron wire, leather belts, canvas, etc. The problem of motor power was solved by using the five Diesel engines belonging to the co-op which were seldom used before. In order to save oil and lower operating costs, they built a methane power station.

TRAINING TECHNICAL PERSONNEL

On the question of technicians some people at first proposed that they should ask the county farm tools factory to send some technicians, and others suggested that those co-op members who had gone to work in other factories should be called back. Both plans were discussed and both were rejected, for there was a big leap in industry as well as in agriculture and technicians were needed everywhere. At the same time various factories in the cities and towns started a movement to help the countryside and the handicraftsmen in the nearby town of Fankou offered to send technicians to the villages. The co-op members were overjoyed when machine workers, carpenters and blacksmiths came from the farm tools factory, iron works and the shipyard to teach them skills. On the other hand, the co-op sent nine members to the Fankou Iron Works to learn how to repair rubber tyres, pressure lamps and sprayers. One member was sent to Hankow to study how to use methane for generating electricity and five were sent to Ngocheng City to study how to make granular fertilizer. Arrangements were made for the handicraft co-ops of Fankou to send skilled workers whenever the co-op would need help in making new tools. Some of the handicraft workers also came to the villages to help without being asked. The people said, "To have the workers coming to the villages is like receiving charcoal on a snowy day, to send people to learn technique is like adding beautiful designs to silk."

This co-op has not ignored its own potential technical strength. Arrangements were made for four carpenters to help amateurs learn sawing and planing and for the two members who could operate motors to teach the others what they knew.

During their study and practice, they adopted the method of learning from each other's good points. Workers, peasants and students working together started a movement to improve the tools. Co-op member Hsiao Kung-tse together with some workers from Fankou and a student from Wuhan, who was doing farm work in the locality, made various things like the conveyor belt, a motorized junk and a motorized mill.

After acquiring some general technical knowledge the co-op members often want to know more. To meet their needs special night school classes were organized and those members who knew more about technique were the teachers. The peasant inventor Hsiao Kung-tse, who had learned various skills, was held up as an example for all. and they started a campaign for everyone to become a "versatile man." After discussions the following targets were decided on: each man should learn all the skills of agricultural production; he should be a carpenter, a blacksmith. a mason. a bricklayer; he should be able to operate motors, make repairs, do industrial designing, feed the cattle and sail a junk. Each woman should also learn all the agricultural skills; she should be able to manage a household diligently and thriftily, operate motors, work with and care for the cattle, make repairs, do industrial designing. and needlework, keep accounts and act on the stage. Those who have learned five of the ten skills would be given the title of "versatile man" and a certificate. Thus a tremendous drive for technical reform is developing. Many members have learned enough skills to enable them to function as peasants as well as factory workers. In the first group only 13 were qualified for the title of "versatile man" but in the second group the number increased to 58.

In this way the Hsukuang No. 1 Co-op overcame the difficulty of insufficient technical personnel.

The granular fertilizer plant run by the Hsukuang No. 1 Co-op

A workshop in the farm tools factory of the Hsukuang No. 1 Co-op

JUNGFENG COUNTY LEAPS FORWARD[1]

Jungfeng County, in the province of Yunnan, contains 13 districts and 175 townships. It has a population of 530,000 people, 240,000 of whom are capable of working. By May 1958, Jungfeng had established or was in the process of establishing 1,759 small and medium-sized factories and mines. One hundred fifty of these were built and run by the county, 21 by the districts, and 66 by the townships; 1,522 were farm implements and fertilizer factories run by the agricultural co-ops and their brigades. Every district had small farm tools factories, coal mines, simple coking ovens, simple iron and sulphur works, native products processing plants, synthetic cotton factories, rice mills, meat processing plants, and small non-ferrous metals refineries.

The iron production for 1958 in Jungfeng is expected to reach 30,000 tons. The county will also produce 15,000 tons of synthetic oil, 500 tons of crude copper, 2,000 tons of steel ingots, 1,000 tons of crude lead, 120,000 tons of coke, 829 tons of bacterial fertilizer, 10,000 tons of calcium superphosphate, 1,800 tons of ham and smoked pork, 5,000 tons of synthetic cotton, and many other items needed on the farm and in daily life, amounting to a total value of 32.9 million yuan. Little industrial enterprises are springing up like flowers all over the county. We are getting rid of our historic backwardness for good.

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[1] This article was written by the Jungfeng County Committee of the Chinese Communist Party.

LIMITLESS STRENGTH

The main reason we were able to develop industry so quickly in our county was because the Central Committee of the Communist Party and Chairman Mao Tsetung pointed out our direction and task clearly, giving us limitless moral strength. In addition, the provincial and regional Party committees have constantly urged us on, and the people have shown an enormous zest for their work. With our verve and spirit mounting daily, we have dared to make big plans. We are striving to have the value of our 1958 industrial production exceed the value of our agricultural production.

Setting this goal has aroused the whole county. Besides making a big leap in agriculture, we are going to build industry in a big way by what we call the "Five Steps": Plan the first day, go into action the second day, produce the third day, and work in the spirit of "eat your meal at the fourth watch, go into battle at the fifth watch."

Between March 18 and the end of the month, we opened and renovated 72 mines and factories — an average of one every five hours. For example, Fifth District, in two days, started a farm implements factory, and a coke plant and a sulphur plant. Eighth District hurried to surpass them. Between the 5th and the 12th of April, it opened 55 small enterprises—nine factories, seven mines, and 39 processing plants.

The people urgently want industrialization, and actively support the building of industrial enterprises. They are ready to contribute all they can. District Party secretaries were the first to invest their own money in financing the new plants. Township and co-op administrative personnel went out prospecting and smelted ores. The people took care of transport, dug ores, built furnaces, opened roads. Whenever a government administrator called at their village, young and old asked, "Have you come to set up a factory here?" The people said, "Industrialization can be achieved much sooner, now that even our districts and townships are building plants." They added, "Though we started empty-handed, we're building industries everywhere. They blossom in the morning and by evening we can pick the fruit." It was due to this atmosphere that our industrial production was able to develop so rapidly.

THE PEOPLE BUILD INDUSTRY

By relying on the enthusiasm and creativeness of our worker and peasant masses, Jungfeng County was able to build industry up from nothing. For obtaining personnel, we used the "Four Halves" method — our peasants, traders, students and villagers all became half-time industrial workers. For operational methods, we adopted the "Four Simultaneous" system (simultaneously build and produce, prospect and mine, mine and smelt, produce and study), and "Four Quicks" system (start quick, build quick, produce quick, sell quick). In this way we solved the problems of funds, labour, transport, raw materials, equipment, and technical skill, and further heightened the confidence and determination of the county Party committee to expand industry greatly. The small and medium-sized factories and mines run by the people have brought many improvements to the villages and towns.

Small Spread-Out Industries Co-operate with Farm Co-ops Throughout the land, 1958 has been a year of agriculture and industry leaping forward together. But both are still operated in the main by human labour. Mining, transport and metallurgy require the efforts of a great number of people; if we were to develop these fields in Jungfeng County in the usual way, the government would have to pay for more than 20,000 professional workers. If all the workers were to be recruited by the enterprises themselves, it would involve a much bigger investment as well as many difficulties in the way of living quarters, wages, etc. Moreover, this would affect agricultural production and side-occupations. We solved this problem in the following way:

1) Those industries that are necessarily concentrated and require a high degree of technical skill are run by the government. In our county we have brought together 270 technicians. They handle our smelting, machine repair, motive power and equipment manufacturing.

2) More spread-out enterprises (mining, transport, capital construction and supply of building materials), requiring only ordinary labour are run in collaboration with the farm co-ops. This collaboration takes four different forms:

(A) A contract is made between the industry and the co-op whereby the latter supplies at a fixed time a fixed quantity of raw materials of fixed quality, and is paid accordingly. The co-op allocates its labour power in such a way as to enable it to do as much work as possible for the industrial enterprises during the slack season, less or no work during the busy farming season. This satisfies the requirements of the industry without delaying the agricultural production. We find this form most suitable for producing ore by means of scattered digging.

(B) The industry states the kind of seasonal workers it needs and the co-op sends in rotation a fixed number of its members. The industry pays at the regular work rate, but gives the money directly to the co-op. According to the work each member has done, the co-op pays him 20 to 30 per cent of his earnings in cash to cover his expenses while away from home, and places the remaining 70 to 80 per cent in its general income fund. This form is suitable for shafts where work is fairly concentrated and for capital construction.

(C) The farm co-op sends some of its members when the industry needs people for a particular short-term job. The money is paid on a piece-work basis to the co-op which, in turn, credits the members with work-points to count towards their annual share in its total income. This form is suitable for transport jobs.

(D) The co-op contracts to supply and process construction materials and fuel, such as bricks and tiles, lumber, coke and charcoal. After delivery, when the time comes for the co-op to settle its accounts and distribute income among its members, the industry pays for the raw materials and their processing, plus interest at the standard credit co-operative rate on costs advanced by the co-op.

Close co-operation between the industries and the co-ops has many advantages:

1) It solves the problems of labour, raw materials, transport and capital investment, without hindering

agricultural production. Take the construction of the Anti Iron Works for example. The government sent only four technicians and three administrators. Four farm co-op members, who had experience in iron making, also joined, plus a few returned armymen. These devoted full time to the smelting. Digging the ore, making the coke, transport and lumbering were all handled in conjunction with the neighbouring co-ops. In the four dry months of late winter and early spring, when farm work was light and the earth was dry and firm in the mines, the co-ops organized a large labour force and produced everything the iron works needed for the year. This guaranteed uninterrupted iron production and cut the government's investment considerably.

2) It can make a fuller use of the labour potential. After an industry is set up, the local schools make a contract with it, and the students help with the work while continuing with their studies. The older ones do transport jobs; the younger ones pulverize ore and coke. This solves the industry's labour shortage, and the students earn extra money for their families. The parents are pleased that their children are taught to be competent at both mental and physical labour. The co-ops can also send people who are not suitable for farm work but are better at industrial work to the mines and factories. This lightens the financial burden of the co-ops, while increasing the income of the individuals.

3) Co-operation between industry and agriculture is changing the face of the countryside and adding to the incomes of the co-op members. Industry involves the opening of roads in the remote mountain regions. This results in a general rise in the co-op incomes and in the earnings of individual members. After the iron works was

established in Anti, this out-of-the-way impoverished mountain township began to bustle with all kinds of vehicles on roads running in every direction. In 1957, income from side-occupations in the co-ops was four times that of 1956. The income of members of two of the six co-ops in the township is now higher on the average than what the well-to-do peasants used to earn. In the spring of 1958, the township built a medium-sized reservoir, installed telephones and loudspeakers, and set up a primary and a middle school.

Industry and Trade Co-operate The joint leap of industry and agriculture in 1958 is making our trading enterprises leap as well, to meet the demands of the market. In this field, we have adopted three forms: First, our trading units do processing work, and create close ties between supply, production and distribution. They organize people in the towns to process farm and subsidiary products, local and special products, and to manufacture daily necessities.

Second, salesclerks in the shops work on handicrafts when there are no customers around, and thus take part in production.

Third, trade is combined with processing of raw materials. Pedlars, in addition to selling, also do processing. Purchase, sales, processing, propaganda and geological surveys are combined.

All this offers an outlet for the labour power in the towns and is an important source of labour for developing local industries. Our county town, in two weeks' time, set up three processing plants, spending only 500 yuan for some simple equipment. They borrowed a few old rooms, took some raw materials from the supply and marketing co-operative's storeroom and went to work.

Their products include bowed cotton, umbrellas, iron farm tools, sliced tobacco, oilcloth, coira-rope, animal casings, chicken feathers, talc-powder, turpentine and Chinese medicines. Whatever they turn out is snapped up the moment it appears on the market. In March, their local products and sundries alone sold for 26,908 yuan, bringing them a profit of 3,214 yuan. Their personnel consists of five experienced dependants of the employees, eight townspeople, ten persons whose upkeep is borne by the farm co-ops (four blind men, one cripple, five old and feeble), some handicraftsmen, and some farm and side-occupation co-op members — a total of 80 people.

The blind and the halt have found a road. Deeply grateful, they say, "The Communist Party is leading the development of local industries and we've all become workers. The halt can walk and the blind can see." They are very keen about their work. A 50-year-old blind man, Wu Cheng-hsing, improved a spinner so that it now can spin three strands of coira-rope at the same time, tripling production.

Not only are skilled blind and lame people made use of. We even employ those without any special skills, both in the factories in town and the iron works in the mountains. For instance, in the Chenhsiung Copper Mill, blind men work the bellows, lame men pulverize ore. Blind man Chiu Chang-mao says happily, "I'm not blind any more, I have found the way. The government and the co-op don't have to support me, I can support myself. My eyes are blind, but my limbs are strong. I want to do my share in the big leap forward."

We have over 500 halt and blind people in our county. Their maintenance used to cost the government and farm co-ops more than 20,000 yuan a year. Now they are producing 100,000 yuan annually, in value, for the state, and are a useful source of labour in developing local industry.

Eight Forms of Co-operation Industry's big leap forward has impelled us to adopt the policy of "The whole Party runs factories, the whole people run industries." In our county, the district and township authorities collaborate closely with the co-ops. This takes eight different forms:

1) Unified leadership is combined with individual running of the various enterprises. While concentrating its efforts on agriculture, the district Party committee pays adequate attention to industry. A committee member or the Party secretary himself is charged exclusively with the industrial work in the whole district, while that in the townships and co-ops is left to the non-agricultural production functionary. Labour is divided administratively, so that, for example, "the district runs the mill, the co-op digs the ore, and the township handles the finishing processes." There is another form of division of labour whereby the various enterprises are put under the control of the industrial and communication, supply and marketing, service, grain, and trading departments. The people say they had heard a lot about the whole population running industry before, but now we are really putting it into effect. Before "there was only thunder," they say. Today "it is raining hard."

2) Mining is combined with water conservancy. Paiyao Township of District 13 had a mine shaft full of water and work there is very hard. But nearby fields were in need of water. The mine and the co-op pumped the water out together, and the problems of both were

solved. The people said, "When industry and agriculture co-operate, harmful water becomes useful water."

3) Industrial development is combined with the movement to improve farm implements. Here, we are talking mainly about plants run by the townships. All the co-ops have some skilled handicraftsmen. The township authorities call them together and help them organize an implements-making and repair centre. The co-ops furnish the raw materials and buy the finished products. When there is no work for them to do at the centre, the men go back to work in their farm co-ops.

4) Transport is combined with agriculture and trade. Vehicles go to the mines with raw materials and come back with ore. Or they go to the factories with raw materials and come back with finished products.

5) Production, supply and marketing are combined. District Five set up three factories in two days without spending a cent, using this method. A factory and a farm co-op make a contract. The co-op supplies the labour and the raw materials, which are paid for in finished products. Factories can also co-operate with each other, by means of a products exchange. For instance; an iron mill gives iron to a farm implements factory. The latter gives its products to the co-op to pay the wages of the co-op members who work part-time both for it and the coke factory. The iron mill and the coke factory also exchange products with each other. They all get together and clear accounts once a month; shortages are kept on the books. If any of them become really tight for money, they can help each other through the bank or the credit co-op. This is the method used by the Anti Iron Works.

6) Co-operation between big enterprises and small, like a mother hen and her chicks. The big plants become technical training centres. The smaller plants can send people there to serve an apprenticeship, or the big plants may send technicians to work with them. They also help the small plants financially, and handle their supply and distribution.

7) Combination of the "fixed" methods with the "mobile" methods. The supply and marketing co-op of District 13 has a processing plant for native products and sundries. When they have no materials to work on, all the members take their tools and travel from farm to farm, finding materials and processing them. In this way, trade is combined with agriculture and industry. The members do the purchase, sales and processing, help the peasants in farming technique, publicize state policies and take part in geological surveys.

8) Combination of industry and road building. Basing themselves on their transport needs, the Laipin Iron Mill and a farm co-op, together, in twenty days built five kilometres of highway and 12 kilometres of cart road, saving the state over 50,000 yuan in construction costs. The co-op can now do more transport work and increase its earnings. It benefits and so does the mill.

Our industry grew rapidly after the districts and townships began using these methods, and our people were pleased. In District 13 the people said, "If we relied solely on the state, it would be years before we could have industries here. With the districts and townships running things, we can build any kind of industry we need, and quickly too. Our plants may be small, but we're going to have lots of them. 'Put enough threads together and you've got a rug.' "

So far as the administrative personnel are concerned they have not only learned how to run farm co-ops, but also how to manage industrial enterprises. As the secretary of the Fifteenth District Party Committee pointed out: "We're going to turn the yellow soil into gold, low production into high, brown mountains into green. Our flocks will multiply and our factories will cover the hills. For this we must work and study very hard."

To accelerate local industry, the county Party committee has organized special financial and industrial commissions, that travel among the districts and townships, investigating, summarizing experience and helping the formation of industry. The county Party committee also calls meetings of farm co-op vice-chairmen, and through them explains to the masses the advantages that local industry brings to agriculture, and generally arouses enthusiasm for the running of industry by districts, townships and farm co-ops. All this is aimed at creating a great tide of the whole Party and the whole people running industry.

SPLENDID PROGRESS IN WUTAI COUNTY

Wang Chao-yu

Wutai County, Shansi Province, is rich in industrial raw materials. The county committee of the Chinese Communist Party once had the idea of establishing big industries, linking up with the railways and converting Wutai into an industrial centre. But from 1953 until recently, they only opened two coal mines and a sulphur mine.

Why didn't they do more? Because they were waiting for the government to come and do it for them. It never occurred to them to rely on the people and build industry themselves.

Last year, 1957, the Central Committee of the Communist Party called on the nation to simultaneously develop industry and agriculture, while giving first priority to heavy industry. The Wutai County Party Committee thought this meant that the cities should build industry and the countryside expand agriculture.

In February 1958, when the county Party committee was discussing specific measures for the big leap forward in agriculture, the point was raised that fertilizer was in short supply; they realized that it was essential to build a chemical fertilizer plant. Wutai's cultivated fields are higher than its rivers. If they were to better local irrigation, large numbers of water-lifting devices would be needed. Large-scale water conservancy also requires a great deal of manpower. But manpower was very tight; farm tools and equipment would have to be improved so as to achieve greater efficiency with smaller labour forces and thus make people available for the water conservancy work. Comrade Liu Mei, First Secretary of the county Party committee put it well: "It is precisely because our tools are backward that we have to mobilize such huge numbers to work on water conservancy."

The situation was plain enough. State industries couldn't supply them with the things they needed right away. They would have to rely on developing local industry. Agriculture's big leap forward clarified the meaning of the Central Committee's directive. The Wutai County Party Committee realized that the only way to guarantee a big leap in agriculture was by building their own local industrial enterprises.

They used to have certain fixed ideas about industry. They thought industry meant big enterprises, that before you could start an enterprise you had to have complete machinery and equipment, plus enough money and technicians. They had none of these.

Just as they were fretting over this dilemma, the newspaper carried the report of how Shenhsien County had built its industry.[1] Suddenly, the light dawned on the county Party committee. Wutai had better conditions than Shenhsien. They could build a few more factories without much trouble.

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[1] A poor mountainous area in Shansi, Shenhsien used to have only an extremely weak foundation for industry. But, relying on the people and basing itself on the local conditions, the county Party committee succeeded in building a number of small-scale industries — fertilizer, power generation, oil pressing, etc. — and thus changing the economic backwardness of the area.

Once the awe of industry was dispelled, in accordance with the directives of the Party's Central Committee and the provincial committee and the experience of Shenhsien, the county Party committee plunged into research and discussion. It thoroughly criticized the concept that industry was a mysterious thing. It resolved to immediately learn from Shenhsien, catch up with Shenhsien, and mobilize the whole Party and all the people to build industry.

LOCAL INDUSTRY SERVING AGRICULTURE

After the thinking of the Wutai County Party Committee leaders was liberated, and they realized that the principle of "building more, faster, better and more economically" means to do as much as you can, and they lost their awe of industry, it became possible to bring into play a high degree of intelligence and drive.

They knew that their county had rich resources. But what, specifically, could they produce with them? They weren't too clear. They searched through their ancient county gazettes. They went among the people, on the one hand rousing their interest in industry, on the other hand seeking information from them about raw materials.

Their county gazettes revealed that Wutai once had a copper mine. From the people they learned that they knew how to extract iron copperas and green vitriol fertilizer from coal, and make coal tar, that they could extract ammonium sulphate from local sulphur. Experiments in 1957 had proved that they could extract wine, vegetable oil, and sugar from local wild herbs and plants, as well as fodder for animals.

In accordance with the needs of agriculture's big leap forward, the county Party committee adhered closely to the policy of local industry serving agriculture. As much as the local conditions permitted, they also did their best to meet the needs of the nation's large industries, supply the necessities for people in town and country, and produce articles for export. Their slogan was: Get wild herbs and plants from the surface of the mountains and minerals from their interior; get agricultural products from the fields and aquatic products from the rivers. They called the slogan "Extract treasures from four sources."

To meet the urgent needs of agriculture, the county organized all the coal and sulphur mines already in existence to produce large quantities of iron copperas fertilizer; the ceramic co-operatives concentrated all their strength on making ceramic water pipes. In addition, the county set up 94 factories and workshops for the manufacture of chemical fertilizer and farm tools. At the same time, to meet the needs of the national industry and supply the people with daily necessities, they opened 33 plants that made copper, iron, ammonium sulphate and coal tar, and wine and fodder from wild herbs and farm products.

Thus, they expanded their local industry in many ways, in keeping with local needs and conditions. They guaranteed agriculture's forward leap and, at the same time, helped the national industry, and thus created conditions for the further expansion of local industry. They made products that improved the people's livelihood and created employment that increased income. Everyone became enthusiastic about taking part in building industry. In a little over a month, Wutai County established 127 factories.

WORKING HARD AND RELYING ON THE PEOPLE

During the period of expansion of local industries, Wutai County ran into many difficulties. But by relying on the masses and local resources, and by using local, economical, small-scale methods (as preparation for doing things in a big way), whenever a problem cropped up, they met and solved it.

Their first problem was that they had no money or equipment. The county Party committee therefore organized a propaganda team to go among the people and explain why the big leap in industry and that in agriculture were like a man's two legs. Unless both were moving forward, he couldn't run. The propaganda team also urged the farm co-ops to invest their money in building industry.

To date, 24 co-ops have already invested over 500,000 yuan. The county raised another 600,000 from economies made by its various units, from the bonus and welfare fund of the county administrative organizations, from the surplus reserve funds of the credit co-op. and so on. These sums, together, solved the problem of fund.

To get enough equipment, they scraped around among the existing factories, and tried to find substitutes. They borrowed a donkey engine for the copper mill from a farm implements factory. For housing, they borrowed a few rooms from the peasants. A sulphur mine loaned them firebricks for the sugar mill; the tools factory rushed out small machines and tools for them.

Their second problem was that they had no technicians. Some people thought they ought to request them from higher organizations; they said skill wasn't like money — you couldn't raise it among yourselves. The county Party committee talked the question over and came to the conclusion that this lack of technicians existed everywhere. They would have to rely on themselves to solve it.

Investigation revealed that they had among the people 18 local handymen and army veterans with some technical training. These were put to work and trained on the job. At the same time they sent 54 administrators and workmen to different counties and provinces to learn the skills of smelting copper and iron, making chemical fertilizer and ammonium sulphate, etc. Most of them have already returned. A new corps of competent technicians was formed.

Their third problem was that they didn't know the extent of their natural resources and had no experts to prospect them. While planning their four new copper mills and two new iron works, they intended to build and start production after the provincial and regional authorities did the prospecting for them. But later, the county Party committee realized that it had to go back to its original method of relying on the masses and mobilizing their strength. By making countless inquiries, and having the local peasants do the prospecting, not only did they find outcroppings of ore, they also discovered an ancient mine shaft. What's more, the people voluntarily turned in copper and iron ore they had been keeping for 37 years, totalling nearly 200 tons.

They had their ore, but how could they smelt it without first having it analysed? If they had to wait for proper scientific analysis, they'd never get started. So they used their own local methods. If their tests showed that ore contained copper, they mined and smelted it immediately.

They made the best of what equipment they had. For example, the Kuochiatsai Copper Mill borrowed an old donkey engine and set up a furnace on the mountainside. Using local methods, they produced 40 catties of copper a day. "We're not fussy about how we do it," they said. "We use simple, direct ways. As long as copper comes out, we're satisfied."

"It's guerrilla warfare," was the way the county Party secretary Wu Lieh put it. "When there's no more ore here, we pick up our engine and move to where there is ore. We have nothing to leave behind. We move our plant right into the mountains. Our equipment is simple and we don't build any houses; we can rove all over the hills."

He says Wutai has a fine future as an industrial region. The county Party committee is going ahead with its preparations to expand in a big way. We are continuing with our prospecting and are having our ore samples analysed. We will be getting more workers as the water conservancy project nears completion. By then our plans will be made and we will be able to set up some large plants that will really look like something.

THE WHOLE PARTY AND PEOPLE PITCHING IN

Local industries are small, numerous and scattered. It's not enough to depend on existing forms of executive and administrative organizations. The leadership must be strengthened; a special unit has to be formed for handling industrial expansion. That is why one of the county Party secretaries took command personally and organized a committee to lead the industrial expansion, staffed mostly by members of the county industrial department and bureau, but also including administrators from Party units in charge of rural work, finance and trade, and from county government departments in charge of supply and marketing, banking, commerce, grain collection and finance.

There are four sub-committees. The first is the general office that also handles capital construction, the second manages supplies, the third labour and finance, and the fourth statistics. This form of organization facilitates mutual co-operation and unified leadership, and it solves problems. In addition, by making an overall readjustment of personnel and tightening up, they pulled 66 administrative workers from county units and enterprises, and transferred them to the new factories and mines.

With 118 industrial enterprises already in operation, they ran into the question of co-ordination between supply, production and distribution. In February, the county Party committee discovered that some factories were unable to buy the raw materials they needed, while supply units had materials they couldn't sell, that although finished products could find no customers, the farm co-ops were unable to obtain many of the things they required.

To solve this problem and ensure the expansion of industry, the county Party committee quickly called a series of meetings among the units concerned, and issued revised directives to each regarding its big leap forward. Effort was made to get a clear understanding of the over-all situation concerning raw materials, products and market. An exhibition of industrial and merchandise products was arranged. The "leap forward" targets and plan for industrial construction were revised in accordance with the raw materials and distribution situation. The trading organizations made a supply and distribution plan in keeping with industry's production. After the adjustments were worked out, the trading organizations entered into a contract with industry, guaranteeing to supply it with the raw materials it needs, and industry guaranteeing to produce on time the products the agricultural and distribution units want.

At the same time, the industrial, agricultural and trading organizations inaugurated a system of regular meetings, with mutual inspections, criticisms and adjustments. Poor-quality products must be improved or converted. For example, below-standard wine turned out by the wild herbs and plants factory has been discontinued; the factory is now producing alcohol. This increases both sales and production.

Today Wutai's factories no longer lack raw materials, and their products find a steady outlet. Production is advancing smoothly. They exceeded their quota for the first quarter of 1958 by 28.2 per cent, lowered costs by 2.92 per cent, and increased labour productivity over the norm set by the state by 11 per cent on the average.

LOCAL INDUSTRIES EVERYWHERE

Chang Kuei-ju

I

Yungchun County is located in a mountainous area in the Chinchiang Special Administrative Region, Fukien Province. The large number of rivers with their abundant natural water-power give this part of the country tremendous opportunities for industrial and agricultural production. However, before liberation this was a very poor district with low crop yields. Every year food was in short supply for an average of three months. There was no industry here at all. After the agricultural co-operatives were formed in 1956, this county was transformed into a district with surplus grain. The rapid development of agricultural production was followed by a demand for the development of local industry. The county Party committee, carrying out the principle that local industries should be built to serve the needs of agriculture and relying on the masses, started various small-scale industries in the county, townships and co-operatives. By June 1958 there were already more than 70 industries of various types, including water-power stations, hydro-electric stations, integrated processing plants, a machine-making factory, coal mines, iron works, sulphur mines, fertilizer plants, a porcelain factory, etc. On the average there are now more than two factories or plants in every township, and more than half of the townships in this county have electricity.

The development of local industries has a great effect on the growth of agriculture. The comprehensive factories in agricultural co-ops can process more than 30 kinds of agricultural products and by-products. Over 60 per cent of the food crops in this county are now processed by machines. This alone saves 600,000 work-days and if this amount of time were to be used for farming 25,000 extra *mou* of land could be cultivated. In the past things like bran, sweet potato vines and straw were burned as fuel, but now, after processing, they are good fodder for animals. In 1957 alone more than 10 million catties of fodder were processed, enough to feed 50,000 pigs. The development of such processing industries is a great aid to the women, relieving them of many heavy household tasks, so they may work in the field. The women say with feeling: "Now that we have hydro-electric stations we are very happy. In summer we do not have to pound rice, in winter we need not grind flour. Industry has brought us a second liberation after land reform."

The rapid growth of local industries in Yungchun County clearly shows the people how bright their future will be and increases their enthusiasm for building socialism. In the past the peasants in the mountainous districts were dubious about the possibility of mechanization in their region, saying, "Iron bulls (tractors) can run on the plain, but they will not eat grass on the mountain slope. Others may rely on socialism, but we rely on the gods and local fairies." Now after the development of local industries they speak differently: "When factories are built on the mountains we feel happy. Prosperity is coming to our mountain district. We have had many good dreams, but we have never dreamed of the happiness we have today." Some young peasants had a saying in the past that a good carp will emerge from the brook, a man with a good future will not remain in a mountainous district. They went to the cities and towns, but now these people have come back. The local industries are having an ever-increasing effect on the countryside as they change the economic, political and ideological life in this mountainous district.

II

Local industries in Yungchun County have developed mainly by relying on the masses and encouraging the people to build small factories. Some people did not agree with this method, claiming that in agriculture it was correct to rely on the masses, but in industry there should be reliance on the state. They argued that the correct application of the mass line in industry was for the state to supply the funds and let the masses do the work and get wages. After some serious debates these incorrect points of view were defeated, and the correct line was accepted. The facts prove that the people urgently demand that local industries be started. When the county Party committee raised the slogan: "Those who have labour contribute labour; those who have money contribute money; those who have material contribute material," there was enthusiastic support from the masses, and everywhere the masses started to set up local industries. For example, the hydro-electric integrated, 18-horse-power processing plant started by the Meishan Agricultural Co-op is equipped with three machines for processing rice, wheat and potatoes. The total cost of the plant is more than 4,000 yuan, but the government did not pay anything, nor did the co-op. The money, labour and materials all came from the members. The plant of the Pihsi Agricultural Co-op operated by water-power has six workshops all built by the people, and the co-op spent only 17 yuan to buy iron nails.

III

One very great difficulty in starting local industries in Yungchun County was the lack of technicians. There was only one technician, a secondary technical school graduate, in the whole county. But the people relied entirely on their own resources, overcame the difficulties, and through practice trained their own technicians. Now there are already 1,000 technicians of different grades in the fields of machine-making, iron-smelting, water-power and hydro-electric machinery. What methods were used to build up such a force in less than two years? By the application of the mass line — for people to learn through practice; to study while they work; to train technicians in the workshops; to use short-term training courses; to learn from other districts; to have old plants help young plants; for experienced workers to train apprentices; for older apprentices to train new apprentices. This is the method of linking theory with practice, of combining work and study. It is the quickest and best method of training technicians. Chen Sheng-ping is a good example of the success of this method. He is only 25 years old but *he is responsible for water-power and hydro-electricity in the county. His formal education went up to a year and a half in junior middle school and in 1956 he was only an apprentice.* He studied for six months in the training class for hydro-electric science. Because he worked hard and he had had practice in actual work, his technical level rose rapidly. He designed five fairly large hydro-electric projects all by himself, and after they were tested by floods they were found to be well designed. Another example is Huang Chih-tuan, a technical worker in a farm tools factory. Two years ago he was a carpenter. He worked hard and learned how to install machines and now he has equipped more than 20 factories. These people are representative of China's new technical strength and from their example one can see that a new army of socialist-minded and vocationally proficient technicians is rapidly growing up from the ranks of the masses.

The Yungchun Farm Tools Factory was set up in 1956 in a ramshackle temple built in the Ching dynasty (1644-1911). In the beginning there were only three men, a director, a technician and an apprentice. They had one manually-operated lathe and a fund of 13,000 yuan. Gradually they added four old lathes and about a dozen workers. When they first began casting the waste was more than 80 per cent, but they were not discouraged. The workers said, "Three cobblers together equal one wise man. If we have no good physicians, let us have a meeting of amateur doctors." Thus, by relying on the wisdom and strength of the masses the waste was reduced to 6 per cent. When they first tried to make a water turbine they failed nine times. In all, they held 18 meetings to study the problem and on the tenth try they succeeded. These facts show that there is infinite inventiveness among the labouring people. If their minds are liberated from old inhibiting ideas and if they follow the correct path, they can acquire skills even if they know nothing to start with, and those with poor technique can improve. Problems which previously could not be solved can now be solved with the workers' inventiveness. Men learn technique either through books or through practice, but the best method is to combine the two.

IV

The local industries in Yungchun County have the following characteristics: water-power is used to drive machines and generate electricity; the plants are mainly small and their functions are co-ordinated and they are planned to serve the needs of agriculture. The local water resources are being fully utilized to build water-power and hydro-electric power stations. The people's experiences have shown that wherever there is flowing water a small waterfall can be made and when a water turbine with a leather belt is installed it will generate power. Such water-power stations can be set up not only in mountainous regions, but even in small streams. It is the most economical moving force, and people call it the "never-ending white coal costing no money at all." Such small water-power stations (from two horse-power up to 60) can work processing machines or be used to draw water for irrigation. When a generator is added they can produce electricity. In a short time, when hydro-electric stations will be built everywhere, the further tasks of extending the use of electricity for general farming, electric ploughing, etc. will have to be coped with step by step.

Such water-power and hydro-electric stations in agricultural co-ops should, on the whole, be small ones, for small stations can be set up everywhere in a short time. For example, the Taohsi Agricultural Co-op set up a water-power station by using an irrigation canal two feet wide, having a drop of 1.8 metres with a volume of flow of 0.3 cubic metre per second and a moving force of only two horse-power. Such a water-power station cost only 123 yuan to build and was completed in three days, but it can operate two machines for husking rice and grinding potatoes. In 40 days it can process more than 80,000 catties of potatoes, and in one season it can get back its entire investment. Such small water-powered processing plants can be set up not only by co-ops, but even by production brigades.

Once these water-power stations are set up their functions can be expanded. In Yungchun County water-power is used to process food crops and fodder, husk rice, grind wheat, make granular fertilizer, break up ores, process clay for making porcelain, saw wood, process oil, tea and drugs, pump water for irrigation, etc. Now they are trying to make electric ploughs.

V

In the course of carrying out the Party's directive to orientate towards the countryside, satisfy the peasants' needs and serve agricultural production, the Yungchun

Farm Tools Factory created a revolutionary method of production, in keeping with the mass line. When they first made the "Fukien No. 1" deep-ploughing share, they did not consult the peasants beforehand and after 100 such ploughshares were made they found that nobody wanted them. The peasants said they were too clumsy, too heavy and too expensive. Then the factory made the "Fukien No. 2" deep-ploughing share but this time they did not do it all by themselves. The director and the technicians took a few samples to the peasants asking them to try them out and correct their faults. If the peasants were too busy, they left a new plough there, saying, "You try it out, don't worry if you spoil it." As a result of these consultations and improvements made on the basis of the peasants' suggestions, the plough they finally produced was very well accepted, and sold rapidly. Since then it has become a regular system for the personnel of this plant to go to the fields to consult the peasants and let the peasants try out the new farm tools it plans to turn out. In the past year it produced 19 different types of tools and machines and sold more than 1,000 new farm tools and 200 machines. These items suit the peasants' needs, the prices are reasonable, their quality is high and their durability is appreciated. Most of the machines it manufactures are made of wood. A 25 horse-power iron water turbine costs about 1,000 yuan, while a wooden one costs only 140 yuan and can be used for ten years. This factory also has a system of guaranteed repairing, refunding and exchanging. This is an example of the way it works: A potato-slicing machine it manufactured was not very good. It sliced slower than by hand. The factory took back all the seven machines it had sold and improved on them and then the peasants were very satisfied. The peasants call such factories "versatile factories," meaning that they produce all the tools needed for agriculture. Machines which have high efficiency and multiple functions are called "versatile machines" and workers earn the title "versatile workers" when they learn how to do many jobs. For instance, the director of a factory is encouraged to know how to keep accounts, etc. while a worker is encouraged to know how to cook and do the work of a peasant too. One should be able to work in the factory during the day and do the accounts in the evening when necessary. In this way cost of production is lowered and the needs of agriculture are further served. All local industries under counties, townships and co-ops should have this excellent feature.

After a little more than one year's effort, the preliminary foundation of local industries in Yungchun County has been laid. They plan to set up 600 small plants and mines in 1958 and provide water-power and hydroelectric stations for the whole county. They also plan, by 1962, to make the total industrial output value double the agricultural and subsidiary output value, with an increase of 26 times over 1957. The rapid development of local industries in Yungchun County is due to the fact that they first started to build on the county level, then using the county farm tools plant as the base, together with small coal pits, small iron works and small fertilizer plants, they expanded the movement to all the townships and co-ops. This seems a good way to develop local industries by the counties and co-ops, in keeping with the policy of building more, faster, better and more economically. Yungchun's experiences are now being

One of the hydro-electric stations in Yungchun that has a generating capacity of 32 kilowatts

Water power from this 2-h.p. unit helps a young girl in Yungchun lighten her work applied to all of Chinchiang region. This year 10,000 small water-power and hydro-electric stations, with processing factories attached to them, are planned and within three years water-power and hydro-electricity will be developed throughout the region.

全民办工业的高潮

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